Commodore® MAGAZINE

RUN

THE COMMODORE 64/128 USER'S GUIDE

April 1990
An IDG Communications Publication

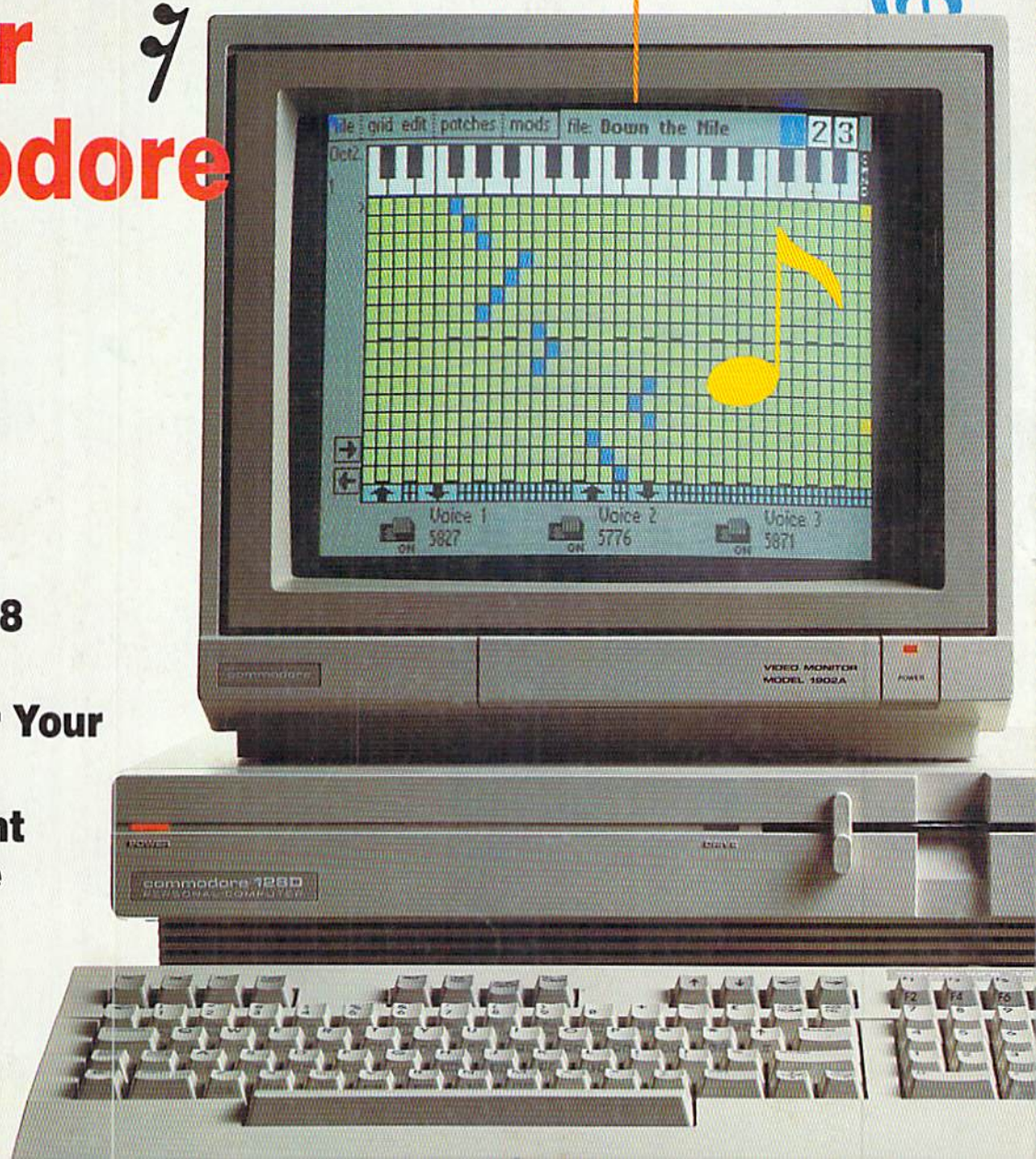
U.S.A. $2.95
CANADA $3.95
U.K. £2.00

CREATE MUSIC On Your Commodore

Consumer Electronics Show Report

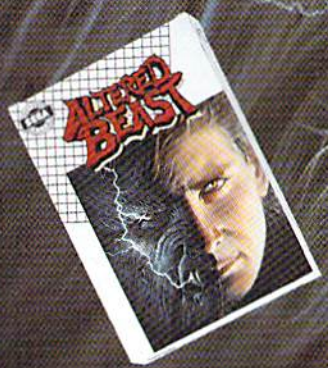
Plus:

- Add 4 New C-128 Commands
- Make a Date for Your Program
- Choose the Right GEOS Hardware
- And More!



0 74820 08679 04

ALTERED BEAST



TRANSFORMATION IS THE ULTIMATE POWER

Distributed by Electronic Arts.™ Copyright 1989 Sega Enterprises, Ltd.

HOW TO FILL YOUR DAYS WITH FANTASY, ADVENTURE, PERCEPTION, FINANCE, INFORMATION, EXCITEMENT, AND MUCH, MUCH MORE... EVERY MONTH.

BLOW YOUR MIND FOR ONLY $9.97

WHAT A WAY TO GO, 128!

LOADSTAR 128 is a totally new quarterly software collection designed specifically for the Commodore® 128 by the editors of LOADSTAR, the best-selling monthly disk for the Commodore 64. Every three months you will receive a new 5 ¼" disk filled with new 128-only programs *not found* in our monthly LOADSTAR collection.

USE THE FULL POWER OF YOUR 128

LOADSTAR 128 issue #5 contains seven great programs for your C-128, taking advantage of the 128 features like the 80-column format, larger memory and a more powerful BASIC.

CONTENTS OF ISSUE #5

RESUME WRITER—Create a professional-looking resume.

STORY WRITER—Write a great short story with this special word processor.

RECIPE BOX—Keep all your kitchen recipes on disk.

WRECK OF THE COPERNICUS—Explore space as you play a huge text adventure game.

CONCENTRATE—Have fun with a graphic version of an old TV gameshow.

TEXTURIZER—Modify most text files to suit your word processor.

QUARKTORY—Print important programming information on disk labels.

THE BEST SOFTWARE VALUE FOR THE128

LOADSTAR 128 is delivered direct to you four times each year for only $39.95. That's only $9.97 an issue. So order today with the coupon below or call **1-800-831-2694.**

YES! Please rush me my first issue of LOADSTAR 128 and start my one year subscription (4 quarterly issues) for only $39.95 (Canada/Mexico $49.95, Other foreign $59.95). Make checks payable to **Softdisk Publishing** in U.S. funds. Louisiana residents add 4% state sales tax.

Name _____

Address _____

City _____ State _____ Zip + 4 _____-_____

Home Phone (____) _____-_____

❑ Discover ❑ AmEx ❑ VISA/MC ❑ Payment Enclosed(*U.S. funds only!*)

Card # _____

Signature _____ Exp. _____

SOFTDISK PUBLISHING
P.O. Box 30008 • Shreveport, La. • 71130-0008 **RU040**

CALL TOLL FREE
1-800-831-2694
Circle 66 on Reader Service card.

Commodore is a trademark of Commodore Electronics, Ltd.

Advanced Dungeons & Dragons®
COMPUTER PRODUCT

CHAMPIONS OF KRYNN

The first fantasy role-playing epic set in the AD&D DRAGONLANCE game world!

CHAMPIONS OF KRYNN improves on the award-winning game system used in SSI's mega-hits *POOL OF RADIANCE* and *CURSE OF THE AZURE BONDS*. For the first time ever on your computer, you'll enjoy fantasy role-playing adventure in the legendary AD&D® game world of Krynn! Your quest: Defeat a vile plot by the forces of evil to establish the Dark Queen, Takhisis, as undisputed ruler of Krynn!

IBM DISPLAY

AVAILABLE FOR:
IBM & C-64/128.
APPLE II & AMIGA.

▶FREE POSTER!
Inside every box.

▶CLUEBOOK!
Coming soon to a dealer near you.

To order: visit your retailer or call: 1-800-245-4525 to charge on VISA or MasterCard. To receive SSI's complete product catalog, send $1.00 to: SSI, 675 Almanor Avenue, Sunnyvale, CA 94086.

TSR, Inc.

DragonLance®

ADVANCED DUNGEONS & DRAGONS, AD&D, DRAGONLANCE, and the TSR logo are trademarks owned by and used under license from TSR, Inc. ©1990 TSR, Inc. ©1990 Strategic Simulations, Inc. All rights reserved.

SSI™

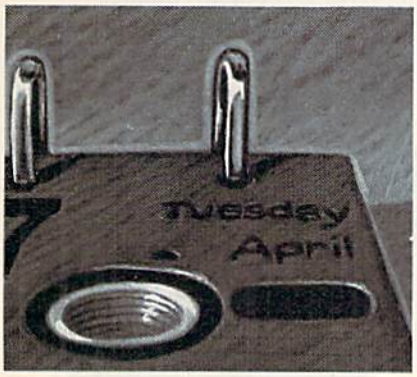
STRATEGIC SIMULATIONS, INC.®

C O N T E N T S

VOLUME 7, NUMBER 4 APRIL 1990

PAGE 26

PAGE 34



PAGE 38

COVER PHOTOGRAPHED BY LARRY DUNN

RUN (ISSN 0741-4285) is an independent journal not connected with Commodore Business Machines, Inc. *RUN* is published monthly by IDG Communications/Peterborough, Inc., 80 Elm St., Peterborough, NH 03458. Phone 603-924-9471. Second-class postage is paid at Peterborough, NH, and at additional mailing offices. Canadian second-class mail registration number is 9565. Subscription rates in U.S. are $22.97 for one year, $34.97 for two years and $48.97 for three years. In Canada and Mexico, the one-year subscription rate is $27.97, with U.S. funds drawn on a U.S. bank. Foreign surface mail subscriptions are $42.97 for one year, and foreign air mail one-year subscriptions are $77.97, with U.S. funds drawn on a U.S. bank. *RUN* is nationally distributed by International Circulation Distributors. **Postmaster**: Send address changes to *RUN*, Subscription Services, PO Box 58711, Boulder, CO 80322-8711. (Canadian address changes to *RUN*, PO Box 1051, Fort Erie, Ontario, Canada L2A 5N8.)

FEATURES

20 BACH TO THE FUTURE *by John Ryan*
Great Scott! *RUN* takes a look at several music software packages that help you write everything from classical to New Age music, using different instrument sounds and fantastic sound effects.

***26 128 BASIC ENHANCER** *by Jim Borden*
You'll FIND these four commands ADD up to nice CHANGES in the OLD way you used to write and edit programs on your C-128.

***30 DOING THE ALPHABET SHUFFLE** *by Charles Phoenix*
Solve this 15 Puzzle-type game by rearranging letters into alphabetical order. A challenging game for the C-64 that includes three skill levels of eight, 15 and 24 letters.

***34 ALIEN STRIKE** *by Behzad Jamshidi*
Space invaders travel at various speeds on unpredictable paths. Are you fast enough to shoot them down without getting zapped yourself? This action-filled shoot-'em-up is for the C-64.

***38 BASIC DATER** *by Ken Huebner*
Now you don't have to suffer the aggravation of getting your latest updated C-64 or C-128 files confused with old backup versions. This handy utility automatically signs the filename, date and time to every program you save.

***42 CONNEX** *by Leonard Morris*
The object is to place randomly generated patterns of five dots adjacent to others already on a gameboard so as to fill as much of the screen as possible. A fun game for the C-128.

DEPARTMENTS

4 RUNNING RUMINATIONS
The Consumer Electronics Show in Las Vegas produced some pleasant surprises, including a CD player that runs software on the C-64.

6 MAGIC
The number-one column of hints and tips for performing Commodore computing wizardry.

10 NEWS AND NEW PRODUCTS
Recent developments and releases in the world of Commodore computing.

13 MAIL RUN
RUN empties its 1989 mail box to make way for the 90s.

14 SOFTWARE GALLERY *Reviews of:*

- Aussie Games
- Empire
- Space Rogue
- Life Force
- Time To Die
- Thud Ridge
- Superman
- Dark Side
- Zero Gravity
- Licence To Kill
- Heroes of the Lance

48 GOLD MINE *by Louis F. Sander*
Gaming tips for 17 of your favorite games, including Batman, Double Dragon, Monopoly and Wasteland.

***50 128 MODE** *by Mark Jordan*
Perfect the fine art of directing C-128 directories.

54 GEOWATCH *by Donald R. Eamon*
Discover the hardware that can enhance the scope and power of your GEOS experience.

57 COMMODORE CLINIC *by Ellen Rule*
Advice about head alignment problems, disk errors, ROM upgrades, and other answers to your questions about Commodore computing.

60 COMING ATTRACTIONS; LIST OF ADVERTISERS

61 *RUN*'S CHECKSUM PROGRAM & PROGRAM TYPING HINTS
Run it right the first time.

*** If you hate to type in listings, these programs are on the March–April 1990 ReRUN disk. To order, see the insert card opposite page 24.**

PUBLISHER
STEPHEN ROBBINS

EDITOR-IN-CHIEF
DENNIS BRISSON

MANAGING EDITOR
SWAIN PRATT

SENIOR EDITOR
BETH S. JALA

ASSOCIATE EDITOR
HAROLD R. BJORNSEN

TECHNICAL MANAGER
TIMOTHY WALSH

COPY EDITOR
PEG LEPAGE

CONTRIBUTING EDITORS
ELLEN RULE; JOHN RYAN
LOU WALLACE

ART DIRECTOR
HOWARD G. HAPP

DESIGNERS
ANN DILLON
LAURA JOHNSON

PRODUCTION SUPERVISOR
ALANA KORDA

ASSOCIATE PUBLISHER AND
NATIONAL ADVERTISING SALES MANAGER
KENNETH BLAKEMAN

SALES REPRESENTATIVE
NANCY POTTER-THOMPSON

ASSOCIATE SALES REPRESENTATIVE
CLASS AD SALES
HEATHER PAQUETTE
603-924-9471

ADVERTISING COORDINATOR
MEREDITH BICKFORD

CUSTOMER SERVICE REPRESENTATIVE
SUSAN KANIWEC

ADVERTISING ASSISTANT
MARGOT SWANSON

WEST COAST OFFICE:

WESTERN STATES SALES MANAGER
GIORGIO SALUTI

SALES REPRESENTATIVE
SHELLEY HARMON

2421 BROADWAY, SUITE 200
REDWOOD CITY, CA 94063
415-363-5230

CIRCULATION DIRECTOR
PAUL RUESS
1-800-274-5241

ASSISTANT CIRCULATION MANAGER
PAM WILDER

MARKETING MANAGER
WENDIE HAINES MARRO

MARKETING COORDINATOR
LAURA LIVINGSTON

EXECUTIVE ASSISTANT TO PUBLISHER
LISA LAFLEUR

Entire contents copyright 1990 by IDG Communications/Peterborough, Inc. No part of this publication may be printed or otherwise reproduced without written permission from the publisher. Programs published in this magazine are for the personal use of the reader; they may not be copied or distributed. All rights reserved. *RUN* assumes no responsibility for errors or omissions in editorial or advertising content. *RUN* does not assume any liability for advertisers' claims.

Commodore Magazine is a registered trademark of Commodore Business Machines, Inc.

RUNning Ruminations

This year's Consumer Electronics Show in Las Vegas produced a pleasant surprise for Commodore owners.

CES THOUGHTS. . .I figured I would spend most of my time at the recent Consumer Electronics Show ogling the latest in electronic gadgetry—pocket-sized TVs, portable VCRs, electronic translators and thin-film technology TVs, such as the 14-inch job shown by Sharp. I reasoned that I could blanket the new developments in the Commodore computer market with a postage stamp.

The good news is I was wrong!

Not even the sticky-fingered San Francisco 49er secondary could cover this market, which continues to flourish as major software manufacturers release C-64 software. Over 50 new games are slated to appear this spring for the Commodore market.

At the annual electronic extravaganza in Las Vegas, most companies reaffirmed their commitment to continue to support the Commodore market, which, behind MS-DOS software, still represents the second best-selling format for software developers. So, in some cases, Commodore owners may have a wait, although it will be a brief one, for the hottest new game to be released in the C-64 format.

We also spotted another continuing trend in software development at the show. It appears that several companies, instead of tooling up to develop their own software, are looking elsewhere—particularly towards the U.K.—to purchase rights to market other software.

New software abounded: Sega showed Altered Beast, Mediagenic previewed Grave Yardage and Taito displayed Operation Thunderbolt. We took particular note of a new hardware device from a company called Camerica. They're producing a product that will allow CD players to run CD software on the C-64. Look for this product, together with at least one CD disc loaded with software, to be offered later this year.

HOLY DOUBLE TAKE, BATMAN!. . .It seems that some people can't get enough of Batman. So, Data East has released its second Batman program for the C-64. The latest one is entitled Batman: The Movie, while the first release is called Batman: The Caped Crusader. The later version appears much more challenging than the comic-book-like Caped Crusader version and is true to the experiences in the box office hit. . .including Batman's tools of the trade, the Batmobile, Batwing and Batarang.

Continued on page 64.

NEW

8 Unbeatable Reasons Why C-128 Owners Everywhere Are Winners with

FUN PAK 128

1. **BLOODSTAR***. It's a desperate international race, pitting you against Japan, the Soviet Union and the United European States as you each try to colonize the rest of the solar system. Enjoy hours and hours of realistic strategy gameplay. By itself, **BLOODSTAR** is worth the entire cost of **FUN PAK 128**!

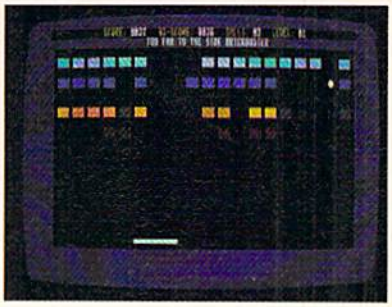
2. **MAZAMORF***. If you liked Pac-Man, you'll be doubly challenged to avoid these voracious meanies. And all the while you'll be trying to make your way out of a maddeningly different kind of maze!

3 & 4. Think you qualify for MENSA membership? Then **CUBIX 2*** and **CUBIX 3*** are ready for the test!

But beware, these twin teasers share only their name—and their neural nastiness!

5. Meanwhile, back in the outer reaches of the universe, load up for a couple rounds of **DEATH QUADRANT**. The blast-happy lover of Asteroids in you will never be busier!

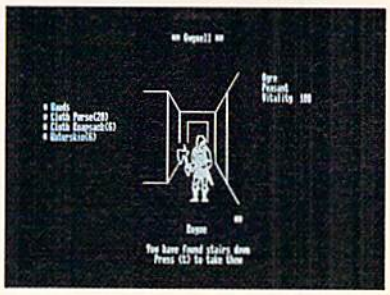
6. Remember what the good old days were like? Well, **BYE, BYE BRICK** reminds you of the by-gone thrills of Breakout, but this time in 80-column color mode.



7. Get your trigger-finger ready for **NIGHTHAWK 128**, a delightful challenge that tests your driving and your shooting skills!

8. **GWYNELL** is a detailed 3-D maze adventure that takes you through level-upon-level of dungeon-danger.

There's always an en-counter or an interesting twist just beyond the next door!



* Denotes a 40-column mode game.

FUN PAK 128 has been called "a cut above what is expected from a budget-priced disk, and well worth its price of **$19.95**."** And with a special 27 page documentation book/playing guide AND a **money-back satisfaction guarantee**, there isn't a 128 owner today who won't be a winner with FUN PAK 128.

** from Twin Cities 128, Issue #26

Order now! Call 1-800-343-0728 or mail the handy coupon, today!

☐ **YES! Send me *RUN*'s FUN PAK 128 today! Here's my $19.95** FP490

Name _____

Address _____

City _____ State _____ Zip _____

☐ Check Enclosed Charge my: ☐ AMEX ☐ MC ☐ VISA

Account _____ Expires _____

Signature _____

Foreign Orders, please add $3.75 per disk for postage and handling. Checks must be made payable in US Funds drawn on US Bank.

FUN PAK 128 • *RUN* Magazine • 80 Elm Street • Peterborough, NH 03458

MAGIC

Create wild and wonderful screen displays with four different screen and title routines, and selectively list C-64 directories by file types.

By TIM WALSH

$58C Title Bouncer 64

Perk up your title screens with the title subroutine, Title Bouncer 64. Put your own title into T$ and run the program, then sit back and watch the title bounce up and down. The range of each bounce shrinks until it gets to the center of the screen, then starts over.

```
Ø REM BOUNCING TITLES 64 - JEFFREY PANICI
                                        :REM*93
1Ø POKE 53281,Ø:POKE 5328Ø,Ø:PRINTCHR$(147
    ):T$="*** YOUR TITLE HERE ***"      :REM*76
2Ø DEF FNT(X)=(4Ø-LEN(T$))/2            :REM*76
3Ø Y=23:X1=1:X2=23:POKE 214,Y:PRINT:PRINT
    TAB(FNT(.))T$                       :REM*92
4Ø FOR I=X2 TO X1 STEP-1:PRINTCHR$(147):PO
    KE 214,I:PRINT:PRINTTAB(FNT(.))T$
                                        :REM*184
5Ø FOR P=1 TO 2:NEXT:POKE 646,INT(RND(1)*(
    16-2)+2):NEXT:X2=X2-1               :REM*153
6Ø IF X2=12 THEN 2Ø                     :REM*2Ø1
7Ø FOR I=X1 TO X2:PRINTCHR$(147):POKE 214,
    I:PRINT:PRINTTAB(FNT(.))T$          :REM*17Ø
8Ø FOR P=1 TO 2:NEXT:POKE 646,INT(RND(1)*(
    16-2)+2):NEXT:X1=X1+1               :REM*47
9Ø GOTO 4Ø                              :REM*218
```

—JEFFREY D. PANICI, SANDWICH, IL

$58D Border Lights 64/128

Border Lights 64/128 cycles multicolored lights along the 40-column screen border of your C-64 or C-128. When you append it to Sway 64/128, the following trick, it makes for a great screen display.

```
Ø REM BORDER LIGHTS 64/128 - TONY EBERLE
                                        :REM*71
1Ø POKE5328Ø,Ø:POKE53281,Ø:C=81:X=.:GOTO1Ø
    Ø                                   :REM*49
2Ø FORD=1Ø24TO1Ø63:POKED,C:NEXT:FORD=11Ø3T
    O2Ø24STEP4Ø:POKED,C:NEXT            :REM*144
3Ø FORD=2Ø24TO1984STEP-1:POKED,C:NEXT:FORD
    =1984TO1Ø24STEP-4Ø:POKED,C:NEXT     :REM*41
4Ø FORD=55296TO55335:POKED,X:NEXT:FORD=553
    75TO56295STEP4Ø:POKED,X:NEXT        :REM*1
5Ø FORD=56295TO56256STEP-1:POKED,X:NEXT:FO
    RD=56256TO55296STEP-4Ø:POKED,X:NEXT
                                        :REM*22
6Ø X=X+1:IFX>254THENX=1                 :REM*5
7Ø GETA$:IF A$="" THEN RETURN           :REM*252
8Ø END                                  :REM*2Ø8
9Ø RETURN                               :REM*232
1ØØ PRINTCHR$(147)                      :REM*51
11Ø PRINTTAB(1Ø)"{CRSR DN}64/128 BORDER LI
    GHTS":PRINTTAB(12)"{2 CRSR DNs}BY{2 SP
    ACEs}TONY EBERLE"                   :REM*241
12Ø PRINT:PRINT:PRINT:PRINTTAB(1Ø)"PRESS A
     KEY TO QUIT.":GOSUB2Ø              :REM*31
13Ø GOSUB4Ø                             :REM*5
14Ø GOTO13Ø                             :REM*21Ø
```

—TONY EBERLE, SANDWICH, IL

$58E Sway 64/128

Make the whole C-64 or C-128 40-column screen sway with Sway 64/128. Use it as a stand-alone program or as a subroutine in your own programs.

```
Ø REM SWAY 64/128 - TONY EBERLE         :REM*178
1Ø POKE 5328Ø,Ø: POKE 53281,Ø:PRINTCHR$(14
    7)                                  :REM*252
2Ø PRINTTAB(5)"{2 CRSR DNs}{2 SPACEs}{SHFT
     U}{2 SHFT Cs}{5 SHFT *s}{12 SHFT Cs}{S
    HFT I}"                             :REM*37
3Ø PRINTTAB(6)" {SHFT B}{4 SPACEs}SWAY 64/
    128{4 SPACEs}{SHFT B}":PRINTTAB(5)"{2 S
    PACEs}{SHFT J}{5 SHFT *s}{14 SHFT Cs}{S
    HFT K}"                             :REM*163
4Ø PRINT"{2 CRSR DNs}WORKS IN C-128 4Ø-COL
    UMN MODE, TOO!"                     :REM*15Ø
5Ø PRINTTAB(11)"{2 CRSR DNs}BY TONY EBERLE
    "                                   :REM*214
6Ø FORLR=ØTO7:POKE5327Ø,(PEEK(5327Ø)AND248
    )+LR:NEXTLR                         :REM*1Ø8
7Ø FORRL=7TOØSTEP-1:POKE5327Ø,(PEEK(5327Ø)
    AND248)+RL:NEXTRL:GOTO6Ø            :REM*184
```

—TONY EBERLE, SANDWICH, IL

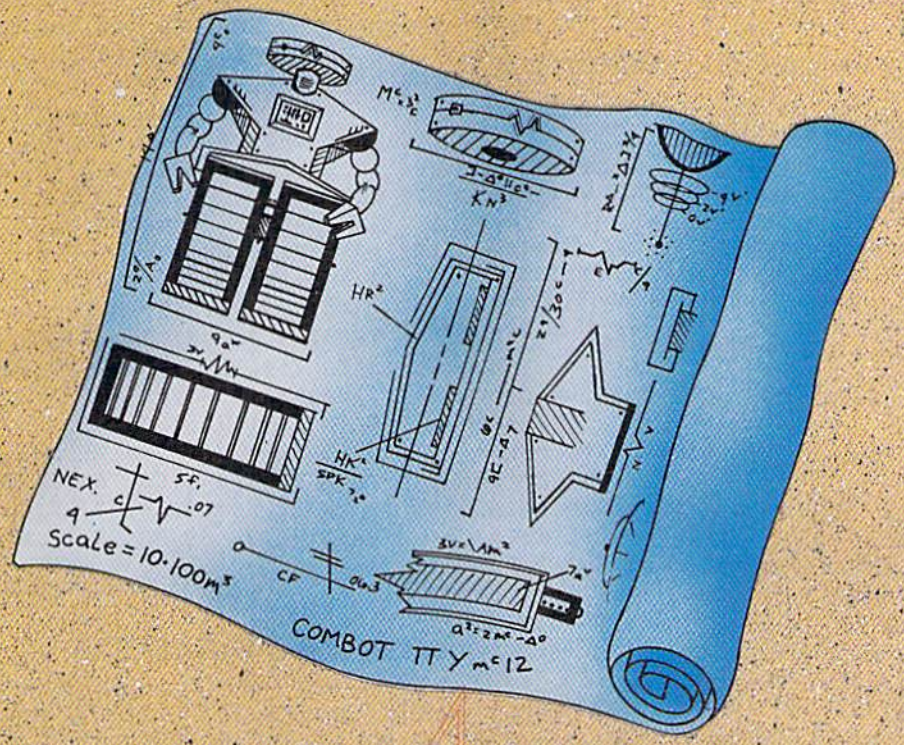
$58F Text Color Scrambler 64

Use Text Color Scrambler 64 to cycle the C-64's 16 colors through all the bytes on the screen. Turn on the effect by entering SYS 49152 and turn it off with SYS 49217.

The cycling runs fast enough to make reading screen text difficult, so it's best to use this routine with large letters and graphics. Appending this trick to Border Lights (trick $58D above) also gives you a super screen display.

```
Ø REM TEXT COLOR SCRAMBLER 64 - FREDRIC PU
  LLIAM                                 :REM*2
1Ø FOR T=49152 TO 49231:READ D:POKE T,D:NE
    XT                                  :REM*2Ø
2Ø DATA 169,255,141,14,212,141,15,212,169,
    128,141,18,212,12Ø,173,2Ø,3         :REM*161►
```

It's Going to Take Ingenuity and Know-How to Win This War



COMBOTS

Build the Ultimate War Machine

Formidable alien robots have been sent to conquer the earth. To win this war, you have to develop the creative talents and computer savvy to build the ultimate COMBOT war machine.

In the tradition of Japananimation, the computer game, COMBOTS, pits you against virtually indestructible alien warrior robots. You'll need finances and successful salvage missions to acquire the parts to start building your army of COMBOTS. Most importantly, you'll need battle experience.

A Construction Program allows you to choose from or build your own broad range of weaponry, armor, sensors and drive trains. A Tactical Combat System matches you against another player or the computer.

In COMBOTS there is no formula for winning. Create the optimum design. Efficiently deploy your COMBOT and you may have a chance. Combots runs on the Commodore® 64/128.

microcomputer games DIVISION.
The Avalon Hill Game Company
A MONARCH AVALON, INC. COMPANY
4517 Harford Road, Baltimore, Maryland 21214 • 301 254-9200

Combots is available for $24.95 wherever good software is sold or call Toll Free to order at 1-800-999-3222. Ask for operator C. Send $1.00 for our full-color brochure.

Circle 47 on Reader Service card.

```
3Ø DATA 141,38,192,173,21,3,141,39,192,169
   ,4Ø,141,2Ø,3,169,192,141,21,3  :REM*145
4Ø DATA 88,96,234,234,162,Ø,173,27,212,157
   ,Ø,216,157,Ø,217,157,Ø,218     :REM*16Ø
5Ø DATA 157,Ø,219,232,224,Ø,2Ø8,236,1Ø8,38
   ,192,12Ø,173,38,192,141,2Ø,3   :REM*239
6Ø DATA 173,39,192,141,21,3,88,96  :REM*2Ø
```

—Fredric Pulliam, Butte, MT

$590 Line Freeze 64

Line Freeze 64 "freezes" the first six rows at the top of the C-64 screen so that text and data you need to refer to won't be accidentally erased.

To freeze up to six lines, multiply the number of lines you want to freeze by 40, then Poke that value into location 49182. For instance, to freeze six lines, run Line Freeze 64, then enter POKE 49182,240 followed by SYS 49152. "Thaw out" frozen screen lines with SYS 49220.

```
Ø REM SIX-LINE FREEZE 64 - FREDRIC PULLIAM
                                    :REM*65
1Ø FOR T=49152 TO 49235:READ D:CK=CK+D:POK
   E T,D:NEXT                       :REM*49
2Ø IF CK<> 9252 THEN PRINT "ERROR IN DATA.
   .":END                           :REM*197
3Ø DATA 76,31,192,12Ø,173,2Ø,3,141,28,192,
   173,21,3,141,29,192,169,48,141   :REM*8Ø
4Ø DATA 2Ø,3,169,192,141,21,3,88,96,234,23
   4,4Ø,16Ø,Ø,2Ø4,3Ø,192,24Ø,221    :REM*62
5Ø DATA 185,Ø,4,153,83,192,2ØØ,76,33,192,1
   6Ø,Ø,2Ø4,3Ø,192,24Ø,1Ø,185,83    :REM*11
6Ø DATA 192,153,Ø,4,2ØØ,76,5Ø,192,1Ø8,28,1
   92,12Ø,173,28,192,141,2Ø,3,173 :REM*227
7Ø DATA 29,192,141,21,3,88,96,234  :REM*96
```

—Fredric Pulliam, Butte, MT

$591 File Type Directory 64

File Type Directory 64 lets you select directory listings based on file types. [C-128 users should see Mark Jordan's 128 Mode column elsewhere in this issue for a discussion of the 128's Directory command.—Eds.] After entering, saving, and running File Type Directory 64, enter SYS 49152,X, where X is one of the following letters: P (Program files); S (Sequential files); U (User files); R (Relative files); and A (All files).

Pressing the Commodore logo, shift or shift-lock key pauses the directory as it lists to the screen. Because this program works in Program as well as Direct mode, you can use it as a specialized subroutine in your own programs.

```
Ø REM FILE TYPE DIRECTORY 64{2 SPACEs}- MI
  CHAEL MYERS                       :REM*182
1Ø FOR T=49152 TO 49385:READ D:POKET,D:CK=
   CK+D:NEXT                        :REM*163
2Ø IF CK <> 3337Ø THEN PRINT"ERROR IN DATA
   ...":END                         :REM*234
3Ø Y=1:FOR I=1 TO 5:A$=MID$("PRGSEQRELUSRA
   LL",Y,3)                         :REM*73
4Ø PRINT"SYS 49152,"LEFT$(A$,1);": FOR ";A
   $;" FILES"                       :REM*45
5Ø Y=Y+3:NEXT:END                   :REM*2Ø2
6Ø DATA 32,115,Ø,133,251,141,224,192,32,11
   5,Ø,169,36,133,169,169,48,133    :REM*125
7Ø DATA 17Ø,169,2,162,169,16Ø,Ø,32,189,255
   ,169,8,162,8,16Ø,Ø,32,186,255    :REM*88
8Ø DATA 32,192,255,162,8,32,198,255,32,2Ø7
   ,255,32,2Ø7,255,169,18,32,21Ø    :REM*55
9Ø DATA 255,169,255,133,252,133,253,16Ø,Ø,
   32,2Ø7,255,72,32,183,255,2Ø1     :REM*128
1ØØ DATA 64,24Ø,1Ø9,1Ø4,153,234,192,2ØØ,19
    2,32,2Ø8,236,23Ø,252,24Ø,31     :REM*195
11Ø DATA 165,251,2Ø1,65,24Ø,14,16Ø,22,2ØØ,
    185,234,192,2Ø1,32,24Ø,248,197 :REM*57
12Ø DATA 251,2Ø8,21Ø,174,234,192,173,235,1
    92,32,2Ø5,189,56,32,24Ø,255,24:REM*169
13Ø DATA 16Ø,4,32,24Ø,255,23Ø,253,16Ø,Ø,16
    2,4,189,234,192,2Ø1,34,24Ø,3   :REM*228
14Ø DATA 232,2Ø8,246,32,21Ø,255,232,189,23
    4,192,2ØØ,192,19,2Ø8,244,173,1:REM*223
15Ø DATA 193,2Ø1,32,24Ø,3,32,63,171,169,1,
    16Ø,193,32,3Ø,171,169,13,32     :REM*172
16Ø DATA 21Ø,255,173,141,2,2Ø8,251,24Ø,134
    ,1Ø4,169,8,32,195,255,32,2Ø4    :REM*45
17Ø DATA 255,174,234,192,173,235,192,32,2Ø
    5,189,169,217,16Ø,192,32,3Ø     :REM*147
18Ø DATA 171,166,253,169,Ø,32,2Ø5,189,96,3
    2,7Ø,82,69,69,46,32,8Ø,45,7Ø      :REM*6
19Ø DATA 73,76,69,83,58,32,Ø        :REM*228
```

—Michael Myers, Beardstown, IL

$592 Math Quiz 64/128

Sharpening multiplication skills needn't be boring for a child. Math Quiz 64/128 makes the drill fun. Type in and save the program, then run it in 64 or 128 mode (40 or 80 columns). Random multiplication problems appear, and the child must enter the correct answer to move on to the next problem, and he or she can quit the program after giving a correct answer.

```
Ø REM 64/128 MATH QUIZ - STEVE KOOPS
                                    :REM*61
5 CLR:A$=CHR$(32):B$="*":C$="="    :REM*226
1Ø A=INT(RND(Ø)*99)+1:A=INT(A/1Ø)   :REM*73
2Ø B=INT(RND(Ø)*99)+1:B=INT(B/1Ø)   :REM*56
3Ø PRINTA$;A;B$;B;C$                :REM*9Ø
4Ø INPUT"ENTER THE ANSWER";D       :REM*156
5Ø C=A*B                           :REM*144
6Ø IF D=CTHEN 8Ø                    :REM*94
7Ø PRINT"WRONG":GOTO3Ø             :REM*176
8Ø PRINT"CORRECT!{2 SPACEs}DO YOU WANT ANO
   THER?"                          :REM*171
9Ø GETA$:IFA$="" THEN 9Ø           :REM*117
1ØØ IF A$="Y"GOTO 5                :REM*118
```

—Steve Koops, Royal Oak, MI ■

Magic is a forum for RUN*'s imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to: Magic, RUN Magazine, 80 Elm St., Peterborough, NH 03458.*

RUN *pays $10 to $40 for each trick published in the column. If you'd like a copy of the latest edition of* RUN*'s Magic Trick Writer's Guide, send your request with a self-addressed, stamped, business-size envelope; you'll receive a copy in two or three weeks.*

Taking your 64 and 128 into the 1990's

CMD HardDrives

- Four modes of operation: 1541, 1571, 1581 emulation modes for compatibility and Native mode with up to 16 Mb partitions.
- Built-in *GEOS™ and *CP/M™ compatibility.
- Standard capacities of 21.5, 48.6 and 104 Megabytes with custom capacities in excess of 200 Megabytes.
- Serial bus interface supports Standard Serial as well as high-performance Fast Serial and JiffyDOS protocols.
- 3 1/2" SCSI technology allows for quiet, cool reliable operation in a compact case about the same size as a 1581 drive.
- Can be interfaced with Amiga, IBM - compatible and MacIntosh computers, allowing you to take it with you when you upgrade.
- Built-in real time clock for time and date stamping of files.

Our goal was to design a reasonably priced drive which was easy to use, and we've done just that. We challenge you to compare our HD series to any other hard drives ever available for the 64 and 128. CMD HD hard drives utilize the latest hardware technology and operate using the most innovative disk operating system ever made available to 64 and 128 owners. CMD engineers were inspired to create a hard drive which overcomes the problems inherent in earlier designs. As a result, the evolution of new features and a level of compatability previously thought of as impossible in any disk drive has become reality. Features such as the SWAP function allow you to operate software which only recognizes a specific device. The built-in SCSI controller allows expansion of your system to over 4 Gigabytes of storage, as well as allowing connection to other types of computers. So while other companies are willing to let your 64 or 128 become obsolete, CMD is taking your 64 and 128 into the '90's. CMD HD Hard Drives are available now, order yours today !

** GEOS is a Trademark of Berkeley Softworks • CP/M is a Trademark of Digital Research*

HD-20 $599.95 • HD-40 $799.95 • HD-100 $1299.95

- **Built-in two drive file copier.** Copy PRG, SEQ, REL and USR files between two drives of any type or to and from REU's. Great for quick backups and moving programs and files between 1541, 1571 & 1581 drives and REU's.
- **REU support.** The JiffyDOS commands now fully support Commodore REUs (RAM Expansion Units) running under RAMDOS. Access your REU just like a disk drive without having to load special wedge utilities.
- **Enhanced text screen dump.** Automatic screen mode recognition and printing of uppercase/graphics & lowercase characters.
- **Redefinable 64-mode function keys.** Allows you to easily redefine the function keys to suit your specific needs.

JiffyDOS Version 6.0

The Ultimate Disk Drive Speed Enhancement System

- **Ultra-fast multi-line serial technology.** Enables JiffyDOS to outperform Cartridges, Burst ROMs, Turbo ROMs, and Parallel Systems – without any of the disadvantages.
- **Speeds up all disk operations.** Load, Save, Format, Scratch, Validate, access PRG, SEQ, REL, USR & direct-access files up to **15 times faster!**
- **100% Compatible – or your money back.** Guaranteed to work with all your hardware and software, including copy-protected commercial programs.
- **Uses no ports or extra cabling.** The JiffyDOS ROMs upgrade your computer and drive(s) internally for maximum speed and compatibility.
- **Easy Installation.** No experience or special tools required for most systems.
- **Supports C64, 64C, SX64, C128, C128D, 1541, 1541C, 1541-II, 1571, 1581 & more**
- **Can be completely switched out.** If ever necessary, the flip of a switch returns you to a 100% stock configuration – without resetting or powering down.
- **Built-in DOS Wedge.** Plus 17 additional commands and convenience features, including file copier, screen dump, directory menu, and single-key load/save/scratch.

- **Supports CMD HD Series Hard Drives and RAMLink.** Enhances the performance of CMD's new line of integrated C64/C128 products.
- **1581 support.** Copy programs and files from 1541 and 1571 drives to any partition on your 1581. Select partitions easily with just a few keystrokes.
- **Quick printer output toggle.** A simple 3-key command switches output from screen to printer and back with ease. Eliminates having to type the complicated OPEN4,4:CMD4 and PRINT#4:CLOSE4 command sequences.
- **Adjustable sector interleave.** Enables you to increase disk-access performance even with hard-to-speedup software.

Hard Drive Ordering Information

Add $25.00 for shipping and handling per drive. All orders shipped UPS ground. Please allow 3 to 6 weeks for delivery. U.S. prices quoted.

Canadian: 20Mb - $649.95 • 40Mb - $849.95 • 100Mb - $1349.95 Shipping: $30.00
Foriegn: 20Mb - $699.95 • 40Mb - $899.95 • 100 Mb - $1399.95 Shipping: $35.00

JiffyDOS Ordering Information

C-64/SX-64 systems $59.95; C-128/C-128D systems $69.95; Additional drive ROMs $29.95
Please specify computer (w/ serial number) and drive(s) when ordering.

Add $4.50 shipping/handling per order, plus $4.00 for C.O.D., APO, FPO, AK, HI, PR & Canada. $12.00 add'l for other overseas orders. MA residents add 5% sales tax. VISA/MC, COD, Check, Money Order. Allow 2 weeks for personal checks. U.G. & Dealer pricing available. Call or write for more information. Version 5.0 owners please call for upgrade information. Prices subject to change without notice.

Creative Micro Designs, Inc. 50 Industrial Dr., P.O. Box 646, East Longmeadow, MA 01028
Phone: 413-525-0023 FAX: 413-525-0147

Circle 166 on Reader Service card.

NEWS AND NEW PRODUCTS

Find out what new goodies software developers offered at the Consumer Electronics Show in Las Vegas last January.

Compiled by HAROLD R. BJORNSEN

AMUSEMENT PARK

MENLO PARK, CA—Mediagenic (3885 Bohannon Drive, Menlo Park, CA 94025) is distributing several new titles for the C-64.

In **Ghostbusters II**, players must bust out of Parkview asylum, collect slime in the sewers and protect a judge from the haunting Scoleri brothers, as well as steer the Statue of Liberty through Manhattan's streets and battle Vigo the Carpathian for the soul of New York. $29.95.

The journey in **Beyond Dark Castle** begins as Prince Duncan returns once again to enter a castle in a quest to defeat the evil Black Knight. Scattered throughout the castle are five magic orbs that must be found and returned to the castle's Ante Room before confronting the evil foe in a showdown. Available for $29.95.

Players can use claws, knives, clubs and energy blasts in **Grave Yardage** to tackle goblins, ogres, zombies, ghouls and other creatures. It's up to you to choose monsters in a lineup, replace the dead and dying with the fresh and furious and design the plays, playing field and team. $24.95.

In **Face Off**, players battle their way through the NHL team to the goalie. Determine your lineup with first-stringers and bench warmers. Players' efforts will determine if the team will play for the Stanley Cup. $29.95.

Power Drift has the players race on five different rollercoaster tracks and courses, each of increasing difficulty. Races are four laps of high-speed turns, collisions and wipeouts against a group of opponents. $39.95.

Check Reader Service number 400.

CRIME, INC.

SAN JOSE—Data East (1850 Little Orchard St., San Jose, CA 95125) introduces two software packages for the C-64 based on recent films.

Batman: The Movie features the Batmobile, the Batwing and the Batarang to help you save Gotham City from the Joker. The program follows the movie's storyline and includes the film's sound effects. $29.95.

The bat symbol alone is enough to strike fear and loathing into the hearts of criminals bent on doing dastardly deeds in Batman: The Movie!

In **The Untouchables**, an action game, players get the chance to be all-American heroes and fight the strongest, dirtiest crime force in history, using different types of ammunition and capturing guns from the enemy for greater firepower. Elliot Ness even does body rolls and anything else it takes to beat the mob and bring Al Capone to justice. $29.95.

Check Reader Service number 402.

BATTLES OF VARIOUS KINDS

SAN MATEO, CA—Electronic Arts (1820 Gateway Drive, San Mateo, CA 94404) is distributing several new games for the C-64.

Pro Tennis Tour—The Ultimate Tennis Simulation features the four major world tournaments. But before stepping into center court, you can practice your serve or strokes against the computer or another player. The six practice programs feature three levels of difficulty on grass, clay or cement courts. $29.95.

Enter a medieval world and encounter its legendary characters. Prove your birthright through using strategy and strength; amaze the town with your superior archery, arm wrestling, swordplay, and dice-throwing skills; travel the towns in search of those who can answer your questions; and build a following that not only respects you, but will go to war for you. Take charge. Prove you are **Iron Lord—The Crusader of Justice**. $39.95.

Summoned by Zeus, God of Thunder, you have been awakened from the dead to challenge the wicked Neff, God of the Underworld, for the fate of Athena. You are the **Altered Beast**, bestowed with five formidable forces of transformation, each more ferocious, more overwhelming than the last. You'll have to destroy Grave Masters, Chicken Stingers, Cave Needles and other foes. $34.95.

In **Pipe Dream**, a "desktop entertainment," the objective is to build the longest possible continuous pipeline, racing against a stream of chemical fluid called flooz. There are 36 increasingly difficult levels, ranging from the unencumbered basic playing field with seven pipe shapes to the higher levels with one-way pipes, obstacles and faster-flowing flooz. $29.95.

Check Reader Service number 403.

SOMETHING FOR TOTS

NORTH MIAMI BEACH—GameTek (2999 NE 191st St., Suite 800, North Miami Beach, FL 33180) is offering six Fisher-Price games, at $14.95 each, for C-64 users aged three to eight.

My Grand Piano is a music program that teaches basic piano theory and musical notation while entertaining children with 30 classic songs.

In **Bowling Alley**, kids learn basic math, coordination and spatial relationships from a bowling game with curved balls, computer scoring and sound effects.

School Bus Driver is a role-playing game of navigation and memory that lets kids pick up Fisher-Price Little People at bus stops and drive them to school. Includes time limits and surprise road blocks.

I Can Remember, a memory game, helps kids develop skills in number rec- ►

SAVE UP TO 70%

CALL FOR YOUR FREE CATALOG TODAY!

1-800-BUY-WISE EXT. 15

Since 1979

ASK ABOUT EXTRA SAVINGS WITH OUR COMPUTER DIRECT CREDIT CARD!

1200 BAUD EXTERNAL MODEM

Features Include:
- RS232/DB25 Connector
- DB9 Pin Adapter
- Telephone Cable
- 1200/300 bps Asynchronous
- Full or Half Duplex
- Auto Dial/Auto Answer
- Standard 9 Volt Battery

AC Adapter Sold Separately for $4.95

LOWEST PRICE EVER!

$49.95

List $199.95

ACCESSORIES

C64C Computer with One FREE Action Game	$129.95
1541-II Disk Drive with One FREE Action Game	$179.95
Epyx 200XJ Joystick	$10.95
Wico Ergostick	$12.95
M-3 Analog Mouse	$43.95
Hearsay 1000	$49.95
Dust Covers	$10.95
5.25" Disk Cleaner	$5.95
3.5" Disk Cleaner	$5.95

NO ONE CAN SELL THIS PRINTER FOR LESS!

180 CPS PRINTER

WITH NLQ

LIFETIME WARRANTY ON PRINTHEAD

- 2 Year Immediate Replacement
- Dot Addressable Graphics
- Italics, Elite, Pica, Condensed
- Centronics Parallel Port
- 8K Printer Buffer
- NLQ Selectable from Front Panel
- Pressure Sensitive Controls
- Includes One FREE Ribbon

FANTASTIC BUY!

$149.95

List $299.00

SOFTWARE

Last Ninja II *List $34.95*
by Activision Was $24.95 ..... **$22.95**

Let's Make Greeting Cards
by Melody Hall *List $10.95* **$6.95**

Let's Make Calendars & Stationery
by Melody Hall *List $10.95* **$6.95**

Omni-Play Basketball *List $34.95*
by Broderbund Was $24.95 ..... **$22.95**

Fun House *List $12.95*
by Hi Tech Expressions **$10.95**

Monopoly *List $39.95*
by Electronic Arts **$23.95**

SAVE $200 ON THE NEW COMMODORE 64C TEST PILOT PACKAGE

Package Includes:
- C64C Computer
- 1541-II Disk Drive
- ACE Joystick *by Kraft*
- Five Software Packages:
  - Advanced Tactical Fighter
  - Infiltrator II
  - Harrier
  - Crazy Cars
  - Tomahawk

ALL THIS FOR ONLY

$299.95

List $499.95

SOFTWARE

Swiftax *List $49.95*
by Timeworks **$34.95**

Wordwriter 4 *List $39.95*
by Timeworks **$27.95**

Shinobi *List $34.95*
by Mindscape **$23.95**

Bad Dudes *List $29.95*
by Data East **$21.95**

Batman *List $24.95*
by Data East **$18.95**

Tower Toppler *List $37.95*
by Epyx **$9.95**

MAGNAVOX 13" COLOR COMPOSITE

Model No. CM8702

LOWEST PRICE EVER!

ONE YEAR LIMITED WARRANTY

$179.95

List $299.95

5.25" DOUBLE SIDED/ DOUBLE DENSITY DISKS

AS LOW AS **19¢ ea**

MADE IN THE USA!

COLOR - AS LOW AS **39¢ ea**

Blue, Green, Yellow, Orange & Red

100% Certified • Lifetime Guarantee

5.25" DSHD DISKS AS LOW AS **45¢ ea**

3.5" DSDD DISKS LOTS OF 10 **59¢ ea**

MAGNAVOX 13" COLOR RGB

Model No. CM8762

OUR LOW PRICE

ONE YEAR LIMITED WARRANTY

$234.95

List $399.95

Prices do not include shipping charges. Call to get your lowest delivered cost. We insure all shipments at no extra cost to you! All packages are normally shipped UPS Ground. 2nd day and overnight delivery are available at extra cost. We ship to all points in the US, Canada, Puerto Rico, Alaska, Hawaii, Virgin Islands and APO-FPO. Monitors only shipped in Continental US. Illinois residents add 6.5% sales tax. Prices and availability subject to change without notice. Not responsible for typographical errors or omissions. *Computer Direct will match any current (within 30 days) nationally advertised price on exact same items. Shipping and sales tax not included. Verification required.

FAX Ordering 708-382-7545 Outside Service Area, Please Call 708-382-5058

COMPUTER DIRECT, INC.
22292 N. Pepper Road
Barrington, IL 60010

Exp 4-30-90

"We Love Our Customers"

Circle 15 on Reader Service card.

ognition and visual recall. Includes three skill levels.

Firehouse Rescue teaches coordination and decision making while letting children drive their own fire truck to rescue Little People and their computer-animated cat.

Perfect Fit is a match-and-fit computer game that helps kids develop skills in picture and shape recognition with puzzles involving 60 different Fisher-Price toys. Includes three levels of difficulty.

Check Reader Service number 401.

SPORTS, STRATEGY, MILITARY, HORROR

BUFFALO GROVE, IL—Konami (900 Deerfield Parkway, Buffalo Grove, IL 60089) has released five new games for the C-64 at $29.95 each.

The horror-adventure game, **Castlevania**, takes players armed with a silvery stake through cavernous dungeons in search of Count Dracula.

In **Double Dribble**, a basketball game, players can test their defense, free throws and full-court press against a friend, or go one-on-one with the computer.

Blades of Steel has you facing off with a friend or the computer in a fight for the Stanley Cup.

The strategy game **Metal Gear** pits players against the evil dictator, Vermon CaTaffy, and his super weapon, which must be destroyed before the Colonel uses it to unleash violence across the globe.

Super C is a military-action game that takes players equipped with hi-tech lasers and rapid-fire machine guns past tropical rain forests and alien cannons to save themselves and Earth. For one or two players.

Check Reader Service number 404.

FOR RACING FANS ONLY

SAN JOSE—Accolade (550 South Winchester Blvd., Suite 200, San Jose, CA 95128) has released several new titles for the C-64. Prices for most were unavailable at press time.

The Muscle Cars is a car-accessory disk for use with the company's Test Drive II racing car game. It lets you choose from five muscle cars of the '60s: the '63 Corvette Sting Ray; the '68 Shelby GT 500 Cobra; the '67 Pontiac GTO; the '69 COPO, 9560 ZL-1 Camaro; and the '69 Dodge Charger Daytona.

European Challenge is a scenery disk for use with Test Drive II. With it, you can race across some of the major highways of Europe.

Heat Wave: Offshore Superboat Racing simulates an entire season of powerboat racing against ten computer opponents. The program features varying weather and water conditions, four different boat designs and the ability to analyze your competitors' crafts, skills and racing records.

Strike Aces: International Bombing Competition combines combat, strategy and strike missions with replicas of 13 different aircraft. The flight simulation takes pilots on 16 different combat-intensive missions over the skies or lets them take charge and design their own missions. $39.95.

Check Reader Service number 406. ■

Excellence ...
for the Commodore

Lt. Kernal – a 20 or 40 Megabyte Hard Drive which supports CPM, includes enhanced system commands, and is expandable, configurable, & *FAST!* Great for BBS operation.

Super Graphix GOLD – the ultimate printer interface which supports 128 FAST serial and includes a 32K buffer, 4 built-in fonts, 4 downloadable fonts, and a utility disk with 27 fonts.

Super Graphix – an enhanced printer interface which has NLQ built in and includes an 8K buffer, 2 downloadable fonts, reset button, and a utility disk with 27 fonts.

Super Graphix jr – an economical printer interface with NLQ built in and includes 10 printing modes, graphics, and easy operation.

FontMaster II – a powerful word processor for the C-64 with 30 fonts ready to use, 65 commands, font creator, data merging, super- and subscripting, italicizing and more.

FontMaster 128 – a super word processor for the 128 with 56 fonts ready to use including foreign language fonts, on-screen font preview, 4 column printing, a 102,000-word spell checker and much more.

The *Xetec* Product Family for the Commodore C64® and 128® .

The name that spells *Quality, Affordability,* and *Reliability*

All Hardware is FCC Certified All Interfaces include a Lifetime Warranty

Commodore C64 and 128 are registered trademarks of Commodore Business Machines, Inc.

Xetec

Xetec, Inc. 2804 Arnold Rd. Salina, KS. 67401 (913) 827-0685

Circle 96 on Reader Service card.

MAIL RUN

RUN empties its 1989 mailbox to clear the decks for the new decade.

DELIVERING THE REST OF THE MAIL

Our files are overflowing. To make room for the 1990 entries, it's time to clean out the Mail RUN mailbox of all the 1989 letters that remain. Each of these had something important to say, but they didn't make it into the Mail RUN column because of space limitations or because they repeated statements in other letters. Herewith are excerpts from those letters that reflect some of the opinions and feelings of Commodore computer users in 1989.

"My loyalty to Commodore products is mainly due to the excellent service I receive from my local computer dealer."

"If Commodore could promote a 'Commodore Personal Computer Series,' with C-64s as introductory-level machines, Amigas as advanced-level computers and PC-compatibles as high-end business computers, they could get the idea across that they are supportive of all these machines and let customers grow and expand within the Commodore computing family alone."

"*RUN* should really try to publish more C-128, 80-column programs. . ."

"Thank you for the article, 'Troubleshooting Troublesome Type-ins' in the May issue. That article saved my day and my sanity."

"Commodore apparently goes out of its way to avoid making service or technical information available."

"Because of all the debate about what the plural form of a mouse is, I have found a suitable name: 'MIDs' (Mouse Input Devices)."

"I will continue to use my trusty C-128 until it up and dies."

"My C-64 is not as inflexible as most PC clones."

". . .the 1581 is a fine disk drive that needs more software support. . ."

"Applications software is plentiful and inexpensive."

"I did not start writing on my C-64 until I was 78 years old, and I find it keeps my mind active and gives me many hours of pleasant activity."

"If all the users of C-64s and C-128s would buy shares of Commodore stock, I think Commodore would listen to their complaints."

—*RUN* READERS

SEARCHING FOR HIS ROOTS

I'm looking for the Latter Day Saints program, Personal Ancestor File, for the C-128. I contacted the LDS Archives, but they've discontinued the program for Commodore computers. Can you or any of your readers help me?

—FRANCIS BLAHNIK
1116 FLAMBEAU ST.
MANITOWOC, WI 54220

We're publishing your letter in the hope that one of our readers will contact you with the program you need. Also, user groups and their newsletters are other possible sources. If all else fails, check with computer dealers and mail order firms for other C-128 genealogy programs.

—EDITORS

PICK A POCKET 2

Mark Jordan, the author of *RUN*'s new column, 128 Mode, is certainly correct when he notes that there is very little software that takes advantage of Commodore's 1351 mouse (see the January 1990 column). One major trio—and possibly the best package available for the C-128—was not named. The Pocket 2 programs—Writer, Filer and Planner—allow for mouse cursoring, range highlighting and pull-down menus.

—HOWARD L. HERMAN
NEW YORK, NY

The column was not an attempt to be comprehensive. The December 1989 issue of RUN *(see "Packing a Punch") presents a more detailed picture and calls the Pocket 2 series ". . .one of the best examples of device support for the C-128."*

—EDITORS

A BETTER WAY

In the January 1990 Commodore Clinic, columnist Ellen Rule states that to use the Sears SR-2000 printer with a Commodore computer, you must connect them with a parallel interface. This is not necessary.

The SR-2000 can be used in Epson mode or Commodore mode while it's hooked up to the serial port. Set DIP switch #6 to *off* for Epson or *on* for Commodore mode. Set DIP switch #8 *on* for Serial mode or *off* for Parallel mode. You may also set all the DIP switches to *off* except for #8, which should be set to the *on* position for Serial mode. The printer can then be used in Epson mode connected only by a serial cable.

—WILLIAM T. HARDEN
FERNANDINA BEACH, FL

Thanks for the correction. We appreciate all such helpful contributions.

—EDITORS

MAKING AN IMPRESSION

I was in need of a new printer and inundated with advertising brochures, all claiming to be the "best." Then, at the most opportune time, came the November 1989 issue of *RUN*. I thought, if anybody should know about printers, it would be *RUN*'s technical manager, Tim Walsh. So I read his article, "Making an Impression with Printers," and bought a Panasonic KX-P1191. I have it coupled to my C-128D with a Xetex Super Graphics Gold interface, and I couldn't ask for any better combination. I'm tickled pink and wish to thank *RUN* and Tim Walsh for saving my day.

—E. R. MOORE
TURLOCK, CA

We're glad we've made such a good impression. Thanks.

—EDITORS ■

A CALL TO READERS

Send your letters to Mail RUN, 80 Elm St., Peterborough, NH 03458. Each letter must include the writer's name and complete address. RUN *reserves the right to edit letters for style, clarity and space.*

SOFTWARE GALLERY

Assume the personas of an intergalactic warrior, a conquering commander, the Man of Steel, James Bond and a bloke down under!

By BETH S. JALA

AUSSIE GAMES ..... A–

Take Off to 'Stralia
For Some Down-Under
Fun in the Sun!

Well, blokes, since this review is about some Aborigine games from down under, you're prob'ly expectin' it will be written using some not-so-imaginative Aussie colloquialisms.

Mates, I didn't want to disappoint you (or you sheilas, either). But so much for the "throw a little shrimp on the barbie" chatter. Let's do this review in plain English, even if this game is a "bloody beaut of a ripper" (as Crocodile Dundee might say).

Or, as an American reviewer would say: Aussie Games is a nicely done collection of half a dozen oddball contests.

How odd are they? Take the Belly Whack event for starters. Use the joystick to fill the pot-bellied diver with big breaths before the time bar moves to zero. When he jumps, line up the diver so he's parallel to the water for maximum belly whack. Animal judges on the sidelines will turn up numbered cards to show your diver's score.

The Beach Footy Ball players compete to see who can kick the ball the farthest down the beach. In the Boomerang Competition, you see some nice 3-D effects as you try to fling the boomerang from the plateau, watch it sail across the bush lowlands and grab it as it flies back.

In the Dry River Race, you hustle down a dry river bed carrying a boat over your head, trying to beat the other team to the finish line. Be careful not to trip over the little animals and other obstacles.

The Beer Shoot is another competition: From the back end of a rolling jeep, you try to shoot empty bottles the driver and passenger are tossing out. The road twists and turns, so holding the bottles in your sight becomes difficult. Since Aussie Games is marketed toward young audiences, this segment seems to send the wrong message. Not only is the driver drinking, but both driver and marksman are littering the electronic countryside. Mindscape partially acknowledges that in its documentation: "And do remember, while we think shooting beer bottles out here is okay, drinking and driving do not mix." So littering the landscape with broken glass is acceptable behavior?

You can belly whack, boomerang, bottle shoot or boat race in Aussie Games.

To close out a day of competitive Aussie fun, you go fishing for marlin. Your point score for the trip depends on how well you play the jumping fish, and the strength of the line you're using.

Depending on the event, players can compete against each other, for an event's high score or as team members.

Overall, Aussie Games offers some unusual variations on the Olympic game theme package. *(Mindscape, 3444 Dundee Rd., Northbrook, IL 60062. C-64/$29.95.)*

—LONNIE BROWN
LAKELAND, FL

REPORT CARD

A Superb!
An exceptional program that outshines all others.

B Good.
One of the better programs available in its category. A worthy addition to your software library.

C Average.
Lives up to its billing. No major hassles or disappointments here.

D Poor.
This program has some problems. There are better on the market.

E Failure.
Many problems; should be deep-sixed!

EMPIRE ..... B+

Wanted: Generals With
Logistics, Planning, Production
And Management Skills

The fans of war games, that special breed of software many of us love to hate, include both those who particularly love the games for their depth, strategy, charts, indexes and rules, and those who are impatient with them for the same reasons. Empire is one of the rare war simulations that can satisfy both groups by providing strategic challenge without the usual inherent frustrations.

As Captain William Brown of the United Galactic Alliance, you must find a way to stop the Krellean Empire from invading Alliance territory and gaining control of key resources. You find yourself dumped on an unexplored planet that you must reconnoiter and conquer.

The crux of Empire revolves around the "turn." Each turn consists of a production phase, followed by a movement and combat phase. It may take many turns before you eventually discover where your opponent is, so a lot of your time at the outset is spent exploring and settling the planet.

Only by building cities can you hope to expand your production base enough to build armies, fighters, transports, aircraft carriers and other warships. Because a unit can take from one ►

RUN W·O·R·K·S

Full 64 and 128 Mode Support!

Productivity Software with a Creative Advantage

RUN Works, a new dimension to productivity software, giving you top quality programs at an economical price! Best of all, **RUN Works is fully C-64 and C-128 compatible!**

Money Manager. Have you ever wondered where your money goes each month? Then Money Manager is for you! This personal budget and record-keeping system will allow you to keep track of your income and expenses. . . so you can stay within your budget!

RUN Term. Nearly half of all Commodore users own modems. *RUN*'s user friendly RUN Term reveals the exciting world of BBSs, on-line networks and information exchanges. With advanced features like 300/1200 Baud support, autodialing, ASCII capture of text, XModem and Punter protocols and much more.

Label Base. Most people need to produce address labels in large quantities from time-to-time, and using your Commodore and printer makes the job quick and efficient. Label Base makes this time-consuming chore a snap.

Form Writer. This program lets you design and print letters, invoices, surveys, or any other kind of form for your small business or home application. Great for school projects too!

RUN Paint. This full-featured paint and draw program has more drawing options and tools than most commercial packages, plus it offers compatibility with the popular Doodle! and Koala graphic formats. Professionals and amateurs alike will find this a fantastic tool for computer art.

RUN PAINT

RUN Shell. This powerful disk utility lets 1541, 1571 and 1581 users access, maintain and manipulate files with ease. It's a menu-driven disk manager that makes erasing, renaming or copying files or disks as easy as the press of a key. Plus a whole lot more!

Graphmaker. A graph-lover's delight! Generate beautiful charts and graphs of your custom data sets for analysis and impressive presentation.

Satisfaction Guarantee: Use **RUN Works** for a full 30 days. If it doesn't satisfy your productivity needs, simply return the disk and fully illustrated documentation book for a complete refund!

To order, mail this coupon or call 1-800-343-0728

Yes! Send me **RUN Works** right away!

☐ $24.97 enclosed. ☐ Charge my: ☐ American Express ☐ MasterCard ☐ Visa

Card # _____ Exp. Date _____

Signature _____

Name _____

Address _____

City, State, Zip _____

Foreign Airmail, please add $3.95 per disk.

RW490

RUN Works
IDG Communications/Peterborough
80 Elm St.
Peterborough, NH 03458
or call 1-800-343-0728

to 50 turns to create, planning and resource conservation become key aspects. Sooner or later, you'll find your quarry—and you'd better be ready to fight!

The world is displayed on a gridded map that can be scrolled in four directions. Combat occurs when two opposing units attempt to move into the same square. Damage points are then subtracted until one unit emerges victorious. Since capturing all your opponent's cities is the main goal, only by having the right mix of units ready for battle can you gain an appreciable measure of success.

Unlike most war games, Empire's

Constructing cities will give you a base from which to build armies in Empire.

player interface is not only simple to learn but highly convenient, for most game controls consist of pull-down menus, file requestors and dialog boxes. Selection is accomplished using the keyboard, joystick or a mouse. While I certainly applaud the developers' efforts to emulate the type of interfaces found on Amigas and Macintoshes, I found the joystick control to be rather awkward and imprecise. Moreover, after you've become familiar with the program's mechanics, it actually slows game play.

Because of the easy-to-use menu structure and simplistic rules of engagement, Empire is a perfect choice for novice gamers. The documentation is thorough and easy to read. Empire is the first war game I've played where you can actually "boot and go" after only a cursory glance at the documentation. But don't let this simplicity fool you. Behind this friendly face is a superb and engaging exercise in strategy that will have you up for many, many nights to come. *(Interstel Corp.; distributed by Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. C-64/$39.95.)*

—JOHN RYAN
BILOXI, MS

SPACE ROGUE ..... B–

A Career in Space Is Yours in This Intergalactic Simulation!

You'd always dreamed of following your father to the stars, and finally, your dream came true. As a merchant marine, you spent the last year touring the universe and polishing your skills as a pilot. Then, you were assigned to investigate the Princess Blue. But before you could, you watched helplessly as the Manchi ships blew the Princess Blue and your former shipmates into space dust.

For some reason, instead of destroying you as well, the Manchi ships returned to N-Space. You've decided to outfit a ship, become an independent trader and search the universe until you find the Manchi and get revenge for their murderous attack on the Princess Blue.

In each world you visit, you find an arcade game designed to hone your combat skills. If you progress through four levels, you win a prize. While exploring the galaxy, you also meet some people who help you and some who are of no help—others are downright nasty! In addition, you engage in trading and bounty hunting.

Although advertised as a role-playing adventure, the only role-playing attribute I could find in Space Rogue was "repute"—any reputation you may have gained as a combat pilot. With each victory, your repute increases, and you're given more dangerous (and prestigious) assignments.

I found this game too dependent on joystick manipulation to truly be called a "role-playing game." The graphics are average, but the game can be quite enjoyable if you're prepared for an afternoon of what I consider to be arcade-game play. I think most true RPG fans will be disappointed unless they're also arcade addicts. *(Origin Systems, Inc., PO Box 161750, Austin, TX 78716. C-64/$49.95.)*

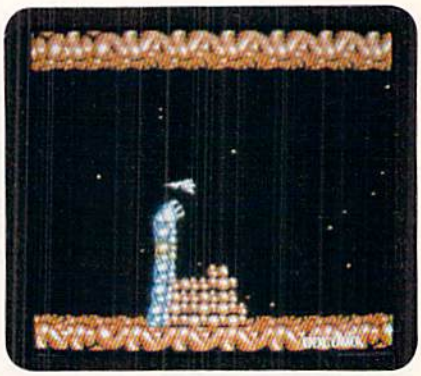
An attack on the Princess Blue spurs you to scour the galaxies in Space Rogue.

—ART LEWIS KIMBALL
TUSCOLA, IL

LIFE FORCE ..... B–

Warning: Beware of Hungry Space Creature!

The object of Life Force is to destroy Zelos, a huge space monster who eats solar systems for breakfast. To accomplish this, you have to pilot your armed starship, the Vic Viper, through six



Be sure you don't let Zelos snack on any celestial bodies in Life Force.

"terror zones" that are parts of Zelos. Each of these zones is guarded by hundreds of alien attackers and one enemy mayor. You find that the mayors are not smiling politicians handing out keys to the city, but rather bizarre monsters that resemble a brain, a dragon, a skull, a robot and even King Tut. If you make it to the end of the sixth zone, you have a chance to attack the heart and soul of Zelos.

As you play Life Force, your starship moves through the vertically or horizontally scrolling zones at a constant speed while you control the ship's screen position. Although you begin the game with a simple laser weapon, you can increase your ship's fire power by picking up pods left behind by destroyed enemy ships.

For those of you who really enjoy a challenging shoot-'em-up, Life Force offers multiple weapons and a wide variety of colorful enemies to battle throughout its six star-dotted terror zones. The game's sound effects are good, though not exceptional, and you can play with or without a musical soundtrack in the background. The M key serves as the toggle, although this feature, as well as the use of P to pause

the game, isn't documented in the player's manual.

Besides the skimpy documentation, there are a few other things about Life Force you should know before visiting your software dealer. First, between levels and each time you restart the game, the screen flashes like a strobe light for about 20 seconds. It's tough on the eyes and gets annoying after three or four rounds. Second, the high-score board lists the ten best scores, but only until you shut off your C-64; nothing is saved to disk. Finally, Life Force is a one-player game, so head-to-head competition, or even cooperative play with a friend, is out of the question. As long as you're aware of these minor irritations when you hand over your cash, Life Force should give you your money's worth. *(Konami, 900 Deerfield Parkway, Buffalo Grove, IL 60089-4510. C-64/$29.95.)*

—BOB GUERRA
CHARLESTOWN, MA

TIME TO DIE C

A Text and Graphics Mystery for the Detective in You

Time to Die offers you a Calvinist course in predestination. An example of the hidden agenda you must follow begins with a ringing telephone on your office desk. If you don't answer

What will you do when the phone rings in Time to Die?

it, you can't leave the building! It's a loaded ante.

You may be a two-bit, scuffed-shoe detective, but you're not stupid; so you answer the phone. A scared voice tells you someone's in trouble, and it's you! Two thugs are hot on your trail.

What to do next? The software enlists your problem-solving talents to delve into this mystery, which actually means second-guessing the program designers about what they have in store for you. Your program offers you a limited number of choices, consisting of looking at things, picking up items, talking to people, dropping objects, climbing stairs, examining rooms, walking in different directions, giving things away, and so on. Combining verbs and nouns into simple sentences, you command the computer to do such things as "tell man to give book to woman." If your computer doesn't understand you, which is often, it will tell you so.

The program draws a colorful new scene each time a change occurs. Basically static, your on-screen graphics occasionally show a small animated item, such as your phone jiggling up and down. Unfortunately, action occupies only about one-fourth of the screen; the rest of your display lists verbs and nouns you can use in conjunction with your joystick's on-screen cursor. You can also type in commands on your keyboard.

A quick-save feature lets you store a game so you don't have to start at the beginning when you die, but there were times when this option went crazy and caused my disk drive to hiccup interminably. When this happened, everything on my screen except the cursor froze, and I'd have to reboot the program.

A zingy narrative keeps your pulse surging: "The bullets are whizzing over your head. You hit the back of the chair, like Bulldog Turner taking out a linebacker, and roll. More shots whine overhead."

If you're a fan of lively interaction, you'll enjoy joining Sam Harlow searching for clues, questioning suspects and gathering evidence. However, if you like more depth and less imagery, you're better off with a product from Infocom. If you're a true hard-boiled type, why not curl up with a good mystery thriller? *(Mastertronic, 18001 Cowan St., Irvine, CA 92714. C-64/$14.99.)*

—JOHN DIPRETE
CRANSTON, RI

THUD RIDGE ..... E

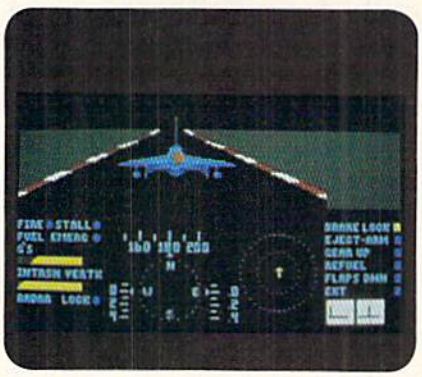
A Bombing Mission That Doesn't Make the Grade

This is perhaps the toughest review I've ever had to write. Unfortunately, that's because I can't find anything good to say about the program.

Thud Ridge is supposed to be a flight/combat simulation that places you—as pilot of a modified F-105 Thunderchief—in the thick of Vietnam War action. The "Thud," as this aircraft was affectionately known, was one of America's most effective weapons against the surface-to-air missile and radar sights of the Viet Cong, quickly gaining a reputation as a tough and reliable combat vehicle. The software revolves around six missions that range from leaflet dropping to ship interdiction. In addition, each mission can be flown at various difficulty levels, based on the rank of the pilot.

The view from the cockpit is not what you would expect from this type of simulation: while there are cockpit controls (engine gauges, weapons, altitude, and so on), the view is that of your F-105 from behind and slightly above the aircraft. Needless to say, this orientation greatly reduces any feeling of flight Thud Ridge could have mustered. Perhaps I could have overlooked this feature if the aircraft had been nicely rendered, but it's not. It's shown as a rather blocky, oversized sprite in the middle of the screen, superimposed over landscape graphics that are chunky and poorly defined. You must use a joystick or keyboard to control the pitch and bank of the aircraft, and this control is extremely awkward. Aircraft response to the joystick is slow and cumbersome, and it's often difficult to determine whether the aircraft is turning, climbing or diving (until you hit the ground, that is).

Weapons include missiles, bombs and a cannon, and you'll need a different



Thud Ridge's Vietnam War action in an F-105 Thunderchief.

mix of these, depending on the mission you've been assigned. Once you take off from an airport (if you want to call the poorly depicted sequence a "take-off"), you must "run the ridge" to reach your target. This ridge is supposed to be a mountain valley that separates Hanoi from your base, and is represented by a series of simple vector lines. Here ►

you'll run into the deadly surface-to-air missiles you must face before proceeding with your mission. Thankfully, the authors saw fit to add "cheat" keys that automatically set your altitude, or advance you to the ridge or other landmarks. I'd like to shake the hand of the person who has actually navigated himself there with this program.

I'm becoming more and more suspicious of C-64 programs that are in packages with Amiga or Atari ST screen shots on the back, as is the case with Thud Ridge. Are they trying to save money, or is the manufacturer ashamed to put C-64 screen shots on the package? I suspect the latter.

A program of this caliber might have been acceptable in 1985, but certainly not in 1990. On the plus side, and to be fair, the opening title screen is nicely done. *(Three-Sixty Pacific; distributed by Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. C-64/$34.95.)*

—JOHN RYAN
BILOXI, MS

SUPERMAN ..... B

The Man of Steel has arrived on the computer game screen. In his latest incarnation, Krypton's native son goes up against longtime foe, Lex Luthor, who has teamed up with the extraterrestrial Darkseid. The bald-pated villain and the would-be deity attempt to kill Superman, destroy a S.T.A.R. Laboratories satellite and set themselves up in authority over the earth.

This software is part comic book (with panels and word ballons), part arcade sequences. Each panel's text is activated and scrolls across the bottom of the screen.

Upon completion of his mission, Superman's final score is displayed. On two double-sided disks, the program entails a lot of disk-swapping, but that doesn't interfere with the game's enjoyment. As for game play itself, there is, unfortunately, nothing truly innovative about "The Man of Steel," as the arcade sequences are rather standard exercises, utilizing Superman's various powers (flight, strength, heat vision, and so on) to dispense with his adversaries.

Where the software succeeds is that it lets the gamer play all six levels every time. It's not necessary to win on one level before advancing to the next. Also, Superman has no extra lives—an on-screen gauge indicates how much power Superman has left.

I personally feel the only drawback is that there's no comic packaged with the game that chronicles the Man of Steel's computerized adventure. *(Intracorp, 14160 SW 139th Court, Miami, FL 33186. C-64/$29.95.)*

—BOB SODARO

DARK SIDE ..... C+

Dark Side employs Freescape, which is a concept in 3-D perspective, to heighten the illusion of on-screen depth-consciousness. Sophisticated graphics land you squarely in the middle of your surroundings.

You have an outdoor view of a military outpost, situated on a rival planet's world. The alien turf reveals laser-mounted towers, secret tunnels, fueling stores, weapons devices and teleportation units on every side of you.

Since you are an invisible participant, nothing appears except for what you see. You have no alter-ego on this nightmarish satellite.

You must "turn" yourself at different angles to see in other directions, enter doorways to peek into buildings and use your jet power pack to rise and go forward. With a keystroke, you can adjust the angle of your turns, as well as lengthen the size of your forward strides. Changing your body's position in any way manipulates the components of your graphics perspective.

Pressing the space bar switches you from Movement to Firing mode, but I often found this operation sluggish. Also, the information panel's letters and numbers aren't easily deciphered; certain parts seem cut off, with the O's resembling U's.

The program's animation doesn't flow—it's quick, but halting. Thankfully, continuous scrolling helps the action.

Unfortunately, the lower information console chews up too much scenery, almost swallowing the basic action graphics. In addition to that, it's dark on the rogue moon Tricuspid, and you almost need a flashlight to probe the nighttime scenery.

With all its pluses and minuses, Dark Side offers angular momentum and depth. *(Cinemaware; distributed by Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. C-64/$29.95.)*

—JOHN DIPRETE

ZERO GRAVITY ..... C+

Continuing the tradition of Pong, Breakout and Arkanoid, Zero Gravity includes a fresh approach to the ball-and-paddle genre, but most players will probably pass it up in favor of similar games.

According to the instruction manual, the program is a futuristic hybrid of volleyball and tennis, supposedly simulating an exercise popular during weightless interstellar journeys.

You compete against another person or the computer, and the playing field is split horizontally to show both players' viewpoints. The paddle you control appears in the top half of the screen, while your opponent's actions are displayed in the lower half.

A game begins with a ball hurtling toward you. If you strike it squarely, the sphere shrinks in your part of the screen as it flies toward the other player's paddle. Making the game more difficult are the bounces the ball takes off the playing field's ceiling, floor and walls. Striking certain side panels also adds more complexity to the contest by awarding bonus points, speeding up the ball or taking away a goal from a player.

The software's graphics and animation are well done. The sound effects are also good, although the instruction manual is incorrect when it states that digitized speech is included.

A more serious shortcoming is the lack of variety. Players who've been spoiled by the more than 30 different Arkanoid screens will probably be disappointed by Zero Gravity's single playing field.

Also, with this program, you have almost no control over the ball's direction. As a result, you earn a victory merely by reacting well, not by developing sound tactics.

Zero Gravity is an interesting example of a genre that's become a perennial favorite. As such, the program may appeal to those individuals who won't mind its relatively passive approach to gaming. *(MicroDeal, U.S.A., 576 S. Telegraph, Pontiac, MI 48053. C-64/$29.95.)*

—WALT LATOCHA

LICENCE TO KILL ..... C–

To date, software adaptations of James Bond films have lacked the gimmicks, glamor and glitz of the originals. Unfortunately, Broderbund's Licence To Kill does nothing to change this.

The game contains six action screens, three of which are based on events that occurred in the film's pre-credit sequence. As the intrepid 007, you begin your adventure in a helicopter in pursuit of a car carrying a murderous drug smuggler. Along the way, you must avoid hitting structures or being shot

out of the air by fire from enemy gun emplacements. Other trials include being pursued underwater by enemy divers and water-skiing barefoot behind a seaplane. Your final mission is to destroy big drug-filled rigs by attacking them from overhead in your crop duster.

Although the scenes scroll smoothly, and some of the graphics and sound effects are quite effective, for the most part the game's technical aspects are unimpressive. Often, lack of visual clarity hampers game play.

Game control is also a mixed bag. Maneuvering and firing from your helicopter are nearly effortless; controlling your Beretta is practically impossible. Due to the muddied visuals and the sloppy joystick control, you will waste many bullets.

Licence To Kill's documentation is woefully inadequate. Many on-screen objects aren't listed or their uses not explained. Other drawbacks include the lack of a game-continue feature and the inability to save high scores to disk.

Diehard 007 fans might find Licence To Kill entertaining, although my ten-year-old Bond devotee threw in the towel after 15 minutes. On a scale of 001 to 009, this James Bond offering receives a mere 003. *(Broderbund Software, Inc., 17 Paul Drive, San Rafael, CA 94903. C-64/$19.95.)*

—LEN POGGIALI

HEROES OF THE LANCE C

The object of this game is to lead eight "Companions" of the Lance on a quest to recover the Disks of Mishakal from the ruins of Xak Tsaroth. This will restore people's faith in the old gods and prevent the Queen of Darkness from creating an evil empire.

You must battle and spell-cast your way through three levels of ruins, sewers and a maze. Your party of adventurers will face draconians, gulley dwarves, black dragon hatchlings, giant spiders, spectral minions, trolls, wraiths and human fighters.

At first glance, SSI seems to have succeeded in creating a game that appeals to both serious role-playing fans and joystick-wielding action addicts. All of the traditional role-playing elements have been preserved, and everything can be accomplished using a joystick. However, neither group is likely to be thrilled by Heroes.

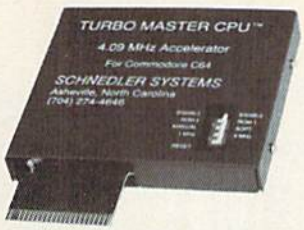
Joystick response is slow and disk-access time is long when changing the lead character. Also, success really depends on the ability to choose the correct lead character for each situation; this skill only comes with careful study of your characters' traits, and with much trial and error.

Heroes of the Lance is overly simple, and its singular quest to recover the Disks of Mishakal is sure to leave many traditional FRP fans asking "Is that all there is?" The proper balance needed to satisfy both RPG and action audiences may be more elusive than a blue healing potion. *(Strategic Simulations, Inc.; distributed by Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. C-64/$29.95.)*

—BOB GUERRA ■

Back in Stock!

Make your Commodore a *Speed Demon*



TURBO MASTER CPU™
4.09 MHz Accelerator Cartridge for C64

- Four times faster processing speed combined with five times faster disk Load and Save.
- Software actually *runs* four times as fast. Basic, word-processor scrolling and search, spreadsheets, assemblers, graphics, GEOS etc. Compatible with most software.
- Jiffy DOS compatibility option available (by Creative Micro Designs).
- Why upgrade when you can enjoy dazzling performance from your C64 now?
- Only $199. Shipping Included

Data acquisition and control interfaces C64 & C128

80-line Simplified Digital I/O Board
with ROM cartridge socket
Model SS100 Plus $139. Additional $129.

Original Ultimate Interface
Universally applicable dual 6522 versatile interface adapter board.
Model 64IF22 $169. Additional $149.

16-Channel, 8-bit analog-to-digital conversion module.
Requires model 64IF22. Model 64IF/ADC0816 $69.

Interface boards include extensive documentation and program disk. Manuals available separately for examination. Call or write for detailed brochure.

Resources for Serious Programmers

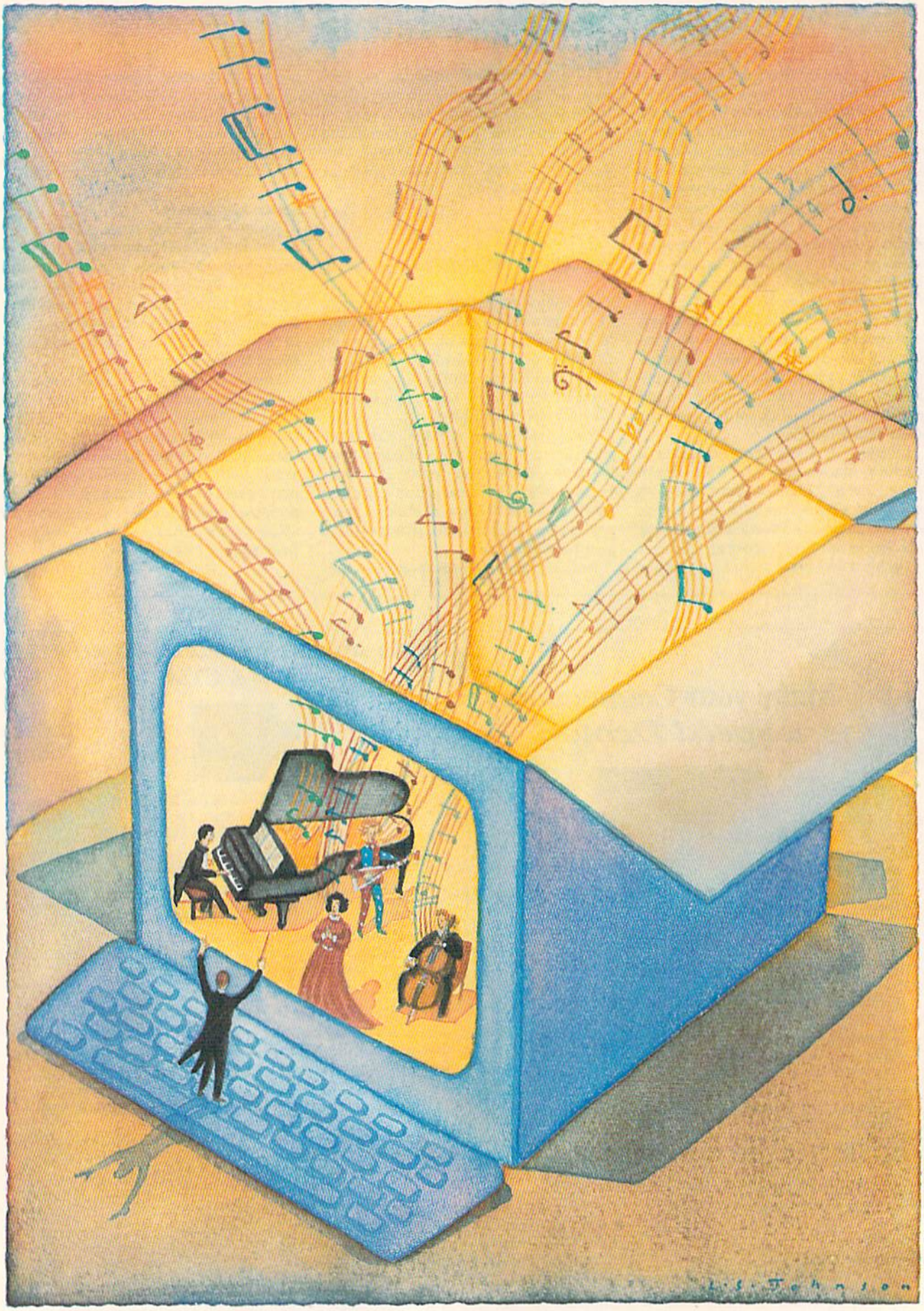
- Symbol Master Multi-Pass Symbolic Disassembler. C64 & C128. $49.95
- PTD6510 super-powerful Symbolic Debugger. C64. $49.95
- MAE64 6502/65C02 Macro Editor /Assembler. $29.95
- C64 Source Code Book. Kernal and Basic ROMs. $29.95

SCHNEDLER SYSTEMS

"We engineer miracles."

Dept. R4, 25 Eastwood Road, PO Box 5964
Asheville, North Carolina 28813 Telephone: (704) 274-4646

VISA and Mastercard accepted.
All prices include shipping
prepaid to US addresses.



ILLUSTRATED BY LONNI SUE JOHNSON

Bach to The Future

Your Commodore can take you on a musical journey through the decades, from Mozart to Madonna and beyond.

With the rising popularity of 16-bit computers, few folks outside the Commodore community realize that the C-64/128 has its own formidable music generator: the Sound Interface Device, or SID chip. This IC was ahead of its time when the computer was released in 1982, and it still makes the Commodore one of the most capable music machines available. Of course, using the chip requires software, so what programs are available to drive it today? Read along and we'll head down the Commodore music road to find out.

Tuning Up

Electronic Arts' Music Construction Set (MCS) was the first powerful music-editing program to appear for the Commodore—a wonderful achievement and a godsend to Commodore musicians. While taking advantage of some of the more advanced features of the SID chip, MCS is easy to use, lets you edit in real time and provides instantaneous feedback.

The editing screen features treble and base clefs (a grand staff), with a keyboard- or joystick-controlled pointer and icon boxes to select program functions. To create music, you "pick up" notes, sharps, flats, naturals, ties and rests and place them on the clefs, shifting between octaves as you wish. You can play back your score at any time, and then use MCS's cut-and-paste function to change it if needed. You can even cut measures from other works and insert them into your current project.

Other MCS features support octave control and "instrument" selection. You can set a sound gauge to any one of 13 different configurations, eight of which sound akin to traditional instruments, such as the flute and harpsichord, while the remainder produce percussion sounds and other special effects.

Deluxe 16-bit versions of this program now enjoy a wide following, but MCS for the Commodore 8-bit machines is not as popular as it once was. Although it's easy to use, the quality of the music it produces is average at best; there's just not enough control of the SID chip features. Moreover, it's becoming difficult to find new MCS music files on the BBSs and national online networks, which were hitherto the major sources of such files.

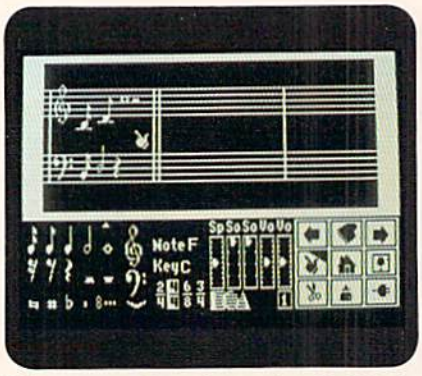
All in all, MCS is an excellent program for starting down the Commodore music road, but seasoned composers may soon find it limiting.

In the Studio

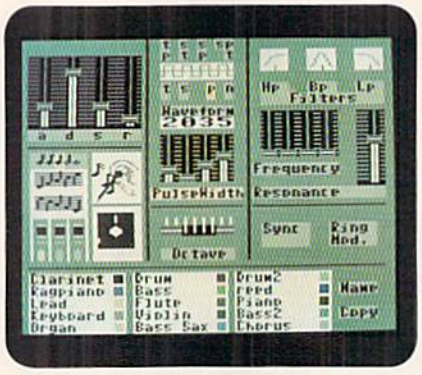
A more ambitious program is The Music Studio from Mediagenic. This group of related programs takes a "tool-kit" approach to musical composition, providing more variety and quality than does MCS. The Music Studio is also MIDI-compatible and can print out compositions.

The key to The Music Studio is its editor. Like that ►

By JOHN RYAN



Write your music on the grand staff of Music Construction Set.



The Music Studio's impressive sound engineering room.

Commodore Software Showcase
FILE: 01-18-90mu.sidi
FROM: qlink 01/18/90 SN: 43339
SUBJECT: C-64 SID : 01-18-90 M1
TYPE: seq
BLOCKS: 84
DOWNLOADS: 18
EST. D/L TIME: 300: 18:59 1200: 05:25
FILES NEEDED: Sequential file reader
This sequential file contains the complete descriptions of files added to the C-64 Music: SID Libraries during the week ending 01-18-90
<< PRESS F7 FOR DOWNLOAD MENU >>
MAIL

QuantumLink gives you a wealth of music files to download.

of MCS, it provides a grand staff along with controls for placing notes and rests. Unlike MCS, it lets you accompany your musical notation with up to four verses of lyrics.

You can play your Music Studio compositions using 15 different instruments. If you don't like the way a particular one sounds, you can change it by adjusting the attack, decay, sustain and release (ADSR) values, the waveform values and various filter settings, as well as resonance, synchronization and ring modulation, either note by note or section by section.

If you're not a musician, you'll appreciate The Music Studio's Paintbox feature, an innovative approach to free-form composition. All you have to do is "paint" colored rectangles up and down a staff, with the length of each rectangle specifying the sound to be played and the color specifying the instrument to be used for that sound. The Paintbox is a real shortcut, and you can even transport compositions generated with it into The Music Studio's regular editor.

The Music Studio is an excellent compositional tool that provides more control than MCS, so you'll produce more with it sooner. Its sound quality is also better, and the Paintbox feature is a boon to novice musicians. The excellent documentation is indexed for easy reference.

Sing Along with SID

Perhaps the most popular music composition and playback program today is Craig Chamberlain's Enhanced Sidplayer for the C-64 and C-128. It is also, in my view, the most sophisticated and powerful music program available thus far.

Sidplayer comes on a double-sided disk with the C-64 version on one side and that for the C-128 on the other. Accompanying the disk is a 274-page, wire-bound manual. The editing features of this program give you total control of the SID chip. Not only can you choose a pitch, waveform and envelope for each of the Commodore's three voices, you can also control filtering, modulation, vibrato, portamento, transposition, and more. If you prefer, the program will filter automatically. Enhanced Sidplayer is so versatile that the files it generates can be merged with your own Basic programs to provide background sound.

Like the other composition programs, Sidplayer has an editor that lets you place musical notation on a grand staff, cut-and-paste, search and play your music back. However, Sidplayer takes the art of composition further. The excellent documentation delves deeply into modulation, filtering, music theory, and more, while guiding you step by step through the music-making process.

A small, stand-alone player program that comes in the Sidplayer package lets you play the literally thousands of Sidplayer files available for downloading from public domain sources such as Q-Link and GEnie (see *RUN*, February 1990, page 27). You'll find everything from the latest pop hits to classics, from single numbers to whole albums; and most of these files are superb. Q-Link members can also "play" Sidplayer files directly off the network through a wonderful service called The Music Connection. Q-Link has the most active Sidplayer user base of any information service.

In addition to standard Sidplayer files, stereo files are

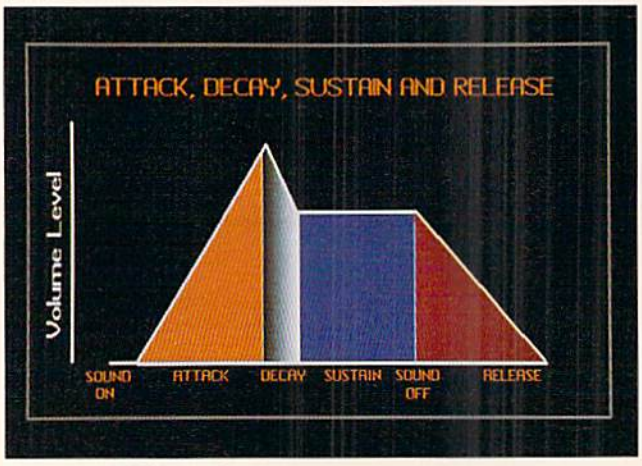
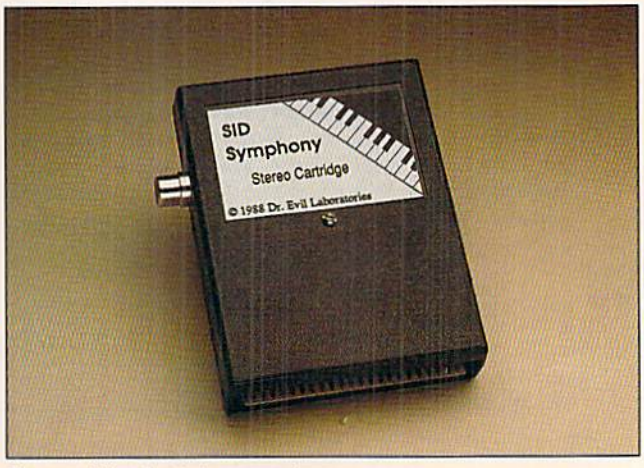
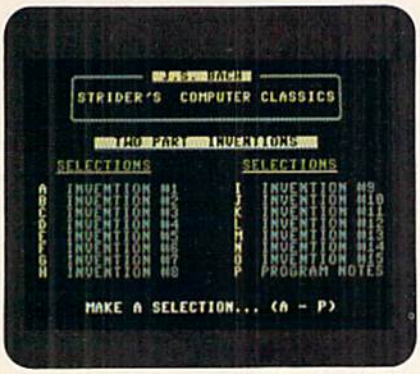


Diagram of ADSR sound pattern.



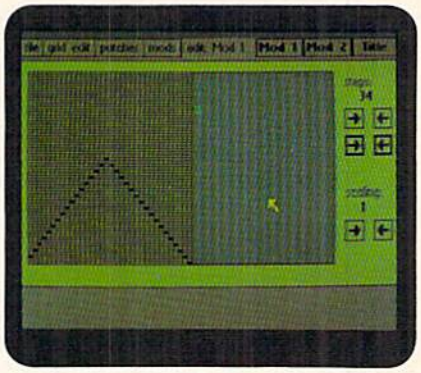
The cartridge that brings you stereo.



The selections on one of Free Spirit Software's music collection disks.

1.Every Time I Feel the Spirit
2.Down by the Riverside
3.Rock-a my Soul
4.No Hiding Place
5.Come and Go With Me
6.Somebody's Knocking At Your Door
7.Amazing Grace(John Newton)
8.Crusader's Hymn
9.Softly and Tenderly (Will L. Thompson)
10.All Things Bright and Beautiful

Another Free Spirit disk features gospel hymns.



***RUN*'s GEOS Companion disk provides the G.O.Bach editor for both the C-64 and 128.**

available through the online services. However, since the C-64/128 can't produce stereo sound, you must install a hardware device to enjoy the six voices stereo provides.

The simplest such device is the SID Symphony Stereo Cartridge, available from Doctor Evil Laboratories. Plugged directly into the expansion port, it outputs three additional voices to an external amplifier and speaker. The original version of the cartridge was powered by a 9-volt alkaline battery connected to the external system with a simple RCA male-to-male cable. A new version of the cartridge is now powered directly from the user port. The price of the new one has not yet been announced.

Having tested this little gem for three months, I'm now spoiled by the addition of stereo to my C-128! Sidplayer files ►

SID: The Music Master

THE SOUND INTERFACE DEVICE, or SID chip, is the basis of the Commodore music capability. Unlike a traditional instrument, where you blow through a mouthpiece, draw a bow across a string, or strike a surface, SID creates sound digitally—through high and low voltages, on and off bits. However, the end result, when the electronic pulses are sent to a speaker, is still the same: vibration in the air and in your ear.

The frequency of a vibration determines the *pitch* of the sound it produces, while its *waveform* determines the quality, or timbre, of the sound. Waveform differentiates the sound of a violin from that of a guitar or a flute from a piano.

The SID chip contains three oscillators and waveform generators that produce the Commodore's three voices, and the voices can sound at various frequencies in four waveforms: square (pulse), triangle, sawtooth and noise. The triangle yields a soothing sound and the sawtooth a crisp sound, while the noise waveform can produce everything from gravelly rumbles to high-pitched hisses—the noises ordinarily used for sound effects.

The attack, decay, sustain and release (ADSR) envelope further defines a sound. The easiest way to understand ADSR is to imagine a clap of thunder. The *attack* is how quickly a sound reaches maximum volume; a thunderclap has a very fast attack because it reaches full volume almost instantly. The *decay* is how fast the volume slides from the maximum level to a *sustain* level, where it holds steady or slides more slowly; a thunderclap decays slowly, gradually fading away into the distance. *Release* is how fast the volume finally drops off to zero.

With the C-64, when programmers want to produce sound with the SID chip, they must specify all these characteristics for each vibration in each of the three voices by poking values into various registers. These include the ADSR, pitch and volume registers, as well as a gate bit that enables the sound to be heard. Producing sound effects may require accessing some of the more complicated features of the SID chip, such as filtering, which allows only selected frequencies to pass, ring modulation, synchronization and resonance.

In most cases, the Pokes must be done in a prescribed sequence. For example, you must turn on the volume control and specify a waveform before you enable the sound, or you may hear nothing at all. And you can't place random numbers into these registers, either. The SID chip can produce a lot of sounds—65,536 in eight octaves, to be exact—but you can place only predefined or formulated values in the registers, or you may get unexpected results.

On the other hand, all C-128 programmers have at their command a superior Basic that eliminates the drudgery of poking values into registers. With Basic 7.0, all you have to do is specify the values through the Vol, Sound, Play, Envelope, Tempo and Filter commands. For example, the statement SOUND 3,49000,200, 1,0,100,1,0 replaces several long lines of C-64 Basic.

The Commodore Sound Interface Device is a wonderfully complicated support chip that can produce sounds from laser blasts to flowing sonatas. Programming the chip entails an understanding of music theory, SID architecture and, of course, writing code. And if you don't yet have that understanding, you can just load other people's music and enjoy. —JR

must be written specifically to take advantage of this stereo capability, or they'll yield only mono output. Most public domain Sidplayer files state whether they are stereo.

Dozens of public domain support programs, along with documentation, are available for the Sidplayer and stereo cartridge. One versatile and powerful example is Stereo V1.0 (QuantumLink PD by Robert Stoerre, filename "Stereo.Arc"; or $5 per disk from Dr. Evil Labs, which, by the way, also sells the Enhanced Sidplayer system for $22.95, shipping and handling not included). Stereo V1.0 is a new Enhanced Sidplayer editor utility that allows you to edit all six voices at once (instead of Sidplayer's one voice at a time). Its other features include MIDI editing and playback, a built-in title and text editor and an easy-to-use, menu-driven interface.

No doubt, Sidplayer is the definitive C-64/128 music composition program for both the casual computer musician and the serious composer. If you don't want to create your own music, use it to enjoy the works of other computer musicians from all over the world.

Easy Listening

Free Spirit Software puts out a collection of Commodore transcriptions that you can "load and listen" to without having other software like Sidplayer. The collection includes more than a dozen disks, such as Music of the Masters and Strider's Computer Classics, containing music of Bach, Mozart, Beethoven, Handel, Haydn, Joplin and other composers, as well as gospel classics and popular Christmas selections. Some of these produce less sophisticated sound than Sidplayer and Music Studio files, but most of them are well done.

GEOS users now have access to superb music editors on *RUN*'s GEOS Companion disk: G.O.Bach 40 for the C-64 and G.O.Bach 80 for the 128. These fast, powerful music editors have user interfaces that are unusually well designed. Moreover, on the disk—and accessible from within the programs—are prerecorded sound tracks to provide rhythm for your musical compositions.

There are fewer C-64/128 music programs available today than even a year or two ago, but, armed with any one of those I've described here, both the novice composer and the expert can produce excellent results in a short time. Pick up some sheet music at a local store and transfer it to computer format, or try writing your own compositions. Either road to Commodore music will be fun and rewarding. ■

John Ryan, an air traffic control instructor by profession, moonlights as one of RUN*'s contributing editors.*

Table 1. Product information.

The Music Studio
Mediagenic
3885 Bohannon Drive
Menlo Park, CA 94025
No longer available from the manufacturer; check user's groups, used merchandise ads and mail order firms

The SID Symphony Stereo Cartridge
Dr. Evil Laboratories
PO Box 3432
Redmond, WA 98073-3432
$34.95

Music Construction Set
Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
$14.95

Enhanced Sidplayer
Compute! Publications, Inc.
PO Box 5406
Greensboro, NC 27403
$24.95

Music of the Masters, Strider's Computer Classics, and other selections
Free Spirit Software
PO Box 128
Kutztown, PA 19530
$5 each

QuantumLink
QuantumLink Computer Services
8620 Westwood Center Drive
Vienna, VA 22180
Subscription, $9.95 per month; 8¢ per minute for Plus services (300/1200 baud)

***RUN*'s GEOS Companion**
Includes G.O.Bach and geoPlayer; requires Berkeley Softworks' GEOS 64 or 128. (See ad on page 35 of this issue for ordering information)
$24.97

Table 2. Suggested reading from Compute! Publications, Inc., PO Box 5406, Greensboro, NC 27403.

Compute!'s Beginner's Guide to 64 Sound
John Heilbom
$12.95

Music System for the Commodore 128 & 64: Enhanced Sidplayer
Craig Chamberlain
$24.95

Compute!'s 128 Programmer's Guide
$16.95

All About the C-64, Vol II
Craig Chamberlain
$16.95

64 Sound and Graphics
$12.95

Mapping the Commodore 128
Ottis R. Cowper
$19.95

Hurry!
First Come, First Served!

RERUN

~~Just $9.97 per Disk! (per order of 3 or more)~~

3-for-1 Clearance Sale!!!

3 for $16.47!!

RUN magazine has long published the acclaimed ReRUN software series of useful, economical programs for the C-64 and C-128!

Now, after a long absence, ReRUN's entire program library is available again—at reduced prices! Take a look at this extensive collection of personal productivity software, utilities, games, educational programs and much more! But hurry—quantities are limited!

* Denotes program runs in C-128 mode. ** Denotes both C-64 and C-128 modes. All other programs run in C-64 mode only.

#4 Landlord. Invoices. Money Manager. Teacher. Number Puzzle. Graphmaker. Joystick Artist. SOLD OUT

#5 Auto Menu. Disk Doctor. Big Letters. Title Maker. Turtle Graphics. Calculator. Test Maker. Home Run Derby.

#26 Stack 64. Credit Cards 64. Word Jumbler. Lister. * Ultra Hi-Res. Baroque Music.

#27 * Reminder 128. ** Retir'eze. * Twiddle. * Mind Your Mortgage. Keeping Up to Date. Hook Up to a Portable. Monthly Labels, Envelope Maker.

#28 * RUNTerm 128. RUN's Memo Book. Calendar Maker. RUN Copy 64. Time Keeper 64. * Blank-It 128. C-64 Sprite ML Commands.

#46 RUN Script 64. Create Your Own Keypad. Songfest. Autoboot. Automatic Line Numbers. * Gradebook 128. A Modern Metronome.

#47 DataFile 3.6. DFPrint. DFCalc. * C-128 Screen Dump. Commodore in the Kitchen. The Menu Machine.

#48 ** Home Inventory. Commodore Lanes. * Time Keeper 128. Window Construction Set. Fontastic 64. Video Flash Cards. Mister Poster.

#65 Pay the Bills. Ultraquiz. Perfect Pitch. Spirited Sprites. Wedge Utilities. Brainstorming. RUN Assembler. Songfest.

#66 Disk Reader. Swish! Label Maker. Arithme-Sketch. Murder Mystery. * Ultra Hi-Res II.

#67 * Presto Write 128. * 80-Column Custom Windows. PrintRite 64. Disk Stuffer. 64 Notepad Command Center. Puzzler's Choice.

#68 Moving Messages. * Graphix to the Max. * Tick-Tock 128. ** Form Writer. Unlockup. Math Whiz. Now You See It.

#86 * Video Fantasia. Hi-Res Writer. Needlegraph. Extra! Extra! Read All About It! Disk Keeper. * 3-D Object Editor.

#87 Tri-Solitaire. Attention, Shoppers! * Linker 128. Flash Cards. DFClone. * Typing Tachometer 128. Electronic Address Book. Pegboard.

#88 Alphabet Cadet. The Amazing 16-Color Print Machine. * Bill Minder. Travel Tally. ** Loan Analysis. Islands! Video Poker. ** Mom's Kitchen Aid.

#106 ** Loan Arranger. Turtle-Tutor for Tykes. Programmers, Take Note! Sign Maker. Instant Data Statements. 64 Personal Ledger.

#107 * 128 Notepad. Phaser Phire. Screen Genie. DFCopy. * Outline 128. The Money Program. Cursor Commotion.

#108 Programmer's Pager. Knock! ** Vacation List Generator. ** Easy Banners. Joystick Mouse Emulator. ** Instant Test Maker.

#126 CalcAid 64. Put It on Paper. Dashing Off the Dots. Math Square-Off. * Micro Artist. Extra! Newsletter Graphics. * RUN Script 128.

#127 64 DOS Shell. Wordman. * Color Hi-Res Graphics. Super Sort. Delete 64. Sizzle! Brickout! * RUN Investor. Smart Shopper.

#128 For Good Measure. Mystery Match. * Savings Forecaster. ** Mass File Deleter. Crazy Caverns. ** Finance 64/128. * Instant Address Book.

#P1 Productivity Pak I. (in limited quantities) DataFile. DFMail. DFReport. DFPrint. DFCalc. RUNTerm. Screen Print. Finance Aid. Disk Master. Graph Maker.

#P2 Productivity Pak II. (in limited quantities) ** RUN Script. * Reminder. * Gradebook. 1670 Autodial. RUNTerm Plus. Logo for Kids. Disk Backup. DataFile.

#P3 Productivity Pak III. ** RUN Script 64/128. ** RUN File 64/128. ** RUN Calc 64/128. ** RUN Notepad 64/128. * RUN Investor 128. RUN Dex 64.

Buy 1 disk at the regular price—and get 2 more for FREE! Postage Paid!

ORDER NOW! CALL 1-800-343-0728

Please send me the following **ReRUN** disks:

_____ _____ _____ _____ _____

_____ _____ _____ _____ _____

~~1–2 disks $16.47 each~~
~~3 or more $9.97 each~~
3 For $16.47

Total Disks _____
Price/Disk _____
Total Due $ _____

☐ Payment Enclosed ☐ Charge my: ☐ Amex ☐MC ☐ VISA

Account # _____ Expires _____

Signature _____

Name _____

Address _____

City, State, Zip _____

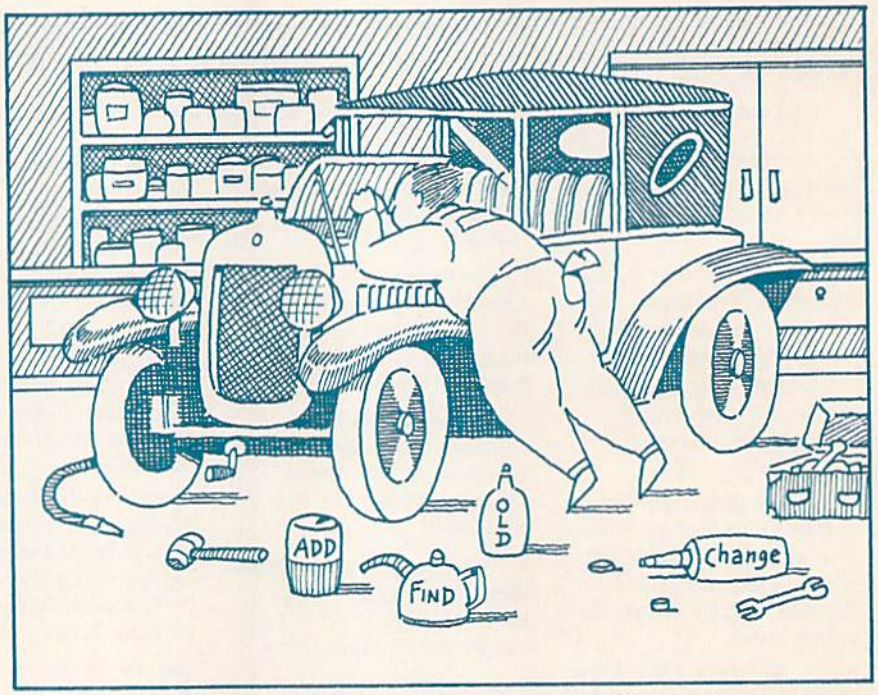
ReRUN, 80 Elm St., Peterborough, NH 03458 1-800-343-0728

Foreign Orders: Add $1.95 per disk for air mail. Payment required in US Funds drawn on US Bank.

RRBI490

128 Basic Enhancer

Here are four handy commands to help you write or edit programs.



By JIM BORDEN

Writing computer programs is enough of a challenge without all the typing that's necessary. The AFCO utility cuts down on that typing—and lets you rescue accidentally "Newed" programs—by adding four commands to the C-128's Basic 7.0 editor. With AFCO, you can Add (append) a program or subroutine to the program in memory, Find or Change text in that program or Old (un-New) a program.

Type in Listing 1 and save it to disk with the name AFCO.BAS. Then run it to write AFCO.ML, the machine language code, to the disk. To use AFCO, either boot AFCO.ML or BLoad it into bank 0 and enter SYS 5380 to activate its wedge. Also type in and save the demonstration program and subroutines in Listings 2, 3 and 4, being sure to enter NEW before starting each one.

Now, here's a description and several examples of each AFCO command.

ADD

The Add command appends a Basic subroutine or program (from drive 8) to the end of the program in memory and adjusts the pointers as required. Using Add requires some planning on your part to ensure proper use of variables in the subroutine you're adding. To that end, I suggest that you keep a record of your subroutines, noting any variables used, the starting and ending line numbers, what data must be passed from the main program to the subroutine and what data will be passed back after the subroutine is finished. The starting line number must be written into any main program to which you add the subroutine.

The syntax for the Add command is simply: ADD "filename". Line numbers aren't important to the Add routine, but be sure to add the *lowest* numbered subroutines first, because new lines are added to the *end* of the program in memory. You can renumber later to clean up any gaps in the line number sequence.

Here's how to use the Add command with the programs in Listings 2, 3 and 4. With AFCO in memory, load the demo program (Listing 2) and list it, noting that it contains eight lines. Then type ADD "Subroutine 60000" on an empty line, press return and list the program again to see that the first subroutine (Listing 3) has been added to the demo. Finally, add the second subroutine by typing ADD "Subroutine 60100" and pressing return. Note that we added the lowest numbered subroutine first.

You could also have executed the Adds by listing the disk directory and just typing ADD over the number of blocks for the file desired; AFCO ignores anything after the second quote.

Now run the demo to see how the added subroutines work with the original. Don't renumber the demo yet, since later examples will refer to the original line numbers.

FIND

The Find command lets you locate all occurrences of a string, variable or keyword in a program listing. To use the command, the text you're seeking must be delimited by quotes, periods or colons. Use quotes when you're looking for text within quotes, and periods or colons when you want to find variables or keywords. Here's an example of the latter:

FIND :X4: ►

RUN it right: **C-128**

ILLUSTRATED BY RAYMOND MEDICI

Lyco Computer
Marketing & Consultants

Since 1981

IBM Business Partner — Authorized Industry Remarketer

COMMODORE SOFTWARE

Access:
Echelon $28.95
Mach 128 ..... $29.95
Mach 5 ..... $22.95

Activision:
Maniac Mansion $23.95
Neuromancer $25.95
Rampage $22.95

Berkeley Softworks:
Geofile 64 ..... $29.95
Geos 64 2.0 ..... $35.95
Geos 128 2.0 ..... $39.95

Geopublish $29.95
Geofile 128 ..... $39.95

Broderbund:
Print Shop $28.95
Print Shop Comp $22.95
GraphicLib1,2,3,ea $15.95
Carmen San Diego WI. $22.95
Carmen San Diego US $25.95

★ Call for ★ New Titles

Microprose:
Gunship $25.95
Stealth Fighter $28.95
Red Storm Rising $28.95

Origin:
Ultima IV $38.95
Ultima V $38.95

Timeworks:
Swiftcalc 128 ..... $31.95
Data Manager 2-64 ..... $12.95
Data Manager 128 ..... $28.95
Word Writer 128 ..... $31.95

ACCESSORIES

Surge Protectors:
QVS PP-102 ..... $15.95
QVS PP-112 ..... $15.95
QVS PP-104 ..... $23.95

Diskettes:
5¼ Disk Notcher $5.95
Xidex 5¼ DSDD $4.95
Xidex 3½ DSDD $9.95

Joysticks:
Boss $12.95
Bathandle $16.95
I Controller $12.95
3-Way $22.95

Printer Interfaces:
Xetec Jr. $35.95
Xetec Supergraphics $55.95
Xetec Gold $74.95
MW 350 ..... $49.95

Printer Paper:
1000 sheet laser $16.95
Banner Paper 45' Roll $10.95

Drive Maintenance:
5¼ Drive Cleaner $4.95
3½ Drive Cleaner $4.95

PRINTERS

Star Micronics

•180 cps draft • 45 cps NLQ • four resident fonts • 216x240 dpi resolution and print pitches ranging from 3 to 20 cpi

NX-1000 II **$159.95**

Panasonic

1180	$169.95*
1191	$216.95
1124	$279.95
1695	$CALL
1624	$439.95

* Quantities Limited

CITIZEN

•120 cps draft speed with improved throughput capabilities •Built-in variable-width tractor•compact design w/bottom paper feed minimize space requiremnts.

120 D **$139.95**

Star

NX-1000 Color	$209.95
NX-1000C	$164.95
NX-1000C Color	$209.95
NX-1000 Series II	$159.95
NX-2410	$279.95

Epson

LX-810	$184.95
LQ-510	$319.95
FX-850	$339.95
FX-1050	$434.95
LQ-850	$489.95
LQ-950	$489.95

Panasonic Office Automation

•9-Pin personal printer • EZ-Set operator panel • adjustable push/pull tractor feed • multiple paper paths • 192 cps draft • 38 cps NLQ

KX-P1180 **$169.95***

* Quantities Limited

Printer ribbons, cables, connections and accessories available for all applications. Please Call.

Citizen

120 D	$139.95
180 D	$154.95
HSP-500	$309.95
GSX-140	$319.95

Brother

1809	$349.95
M1724L	$519.95
1824L	$469.95

Okidata

Okimate 20w/cart	$194.95
172	$195.95
182 Turbo	$229.95
183	$219.95
320	$329.95
321	$459.95

COMMODORE UPGRADES

Excel FSD-2 + Disk Drive

100% Commodore 64C drive compatible, the Excelerator Plus Disk Drive is quieter, smarter, faster, and more reliable than the 1541 and 1541C. *1-year warranty*

$139.95

MAGNAVOX

• 13" diagonal RGB/Composite Color Display
• Green text switch
• Built-in tilt stand
• Interface cables included

CM8762 **$234.95**

GoldStar

• 12" amber display
• 640h x 200v
• IBM and Commodore compatible

2105 A **$79.95**

MONITORS

Magnavox.

BM7652 Mon. Comp	$84.95
BM7622 Mon. Comp	$84.95
CM8702 Color Comp	$CALL
CM8762 RGB	$234.95

Emerson

3200 EM 12" Amber TTL	$79.95
1400 EM 14" CGA	$179.95
1405 EM 14" EGA	$299.95

GoldStar:

2105 A Composite	$79.95
1410 CGA 14"	$209.95
1420 EGA 14"	$319.95
1430 VGA 14"	$349.95

MODEMS

Cardinal:

MB2400EX EXT 2400 Baud	$99.95
MB1200EX EXT 1200 Baud	$69.95

Everex:

Evercom 12 (INT)	$54.95
Evercom 24 (INT)	$119.95
Evercom 24 + MNP	$149.95
Evercom 24E + MNP	$199.95

Avatex:

1200e	$69.95
1200hc	$99.95
2400	$129.95

HARDWARE

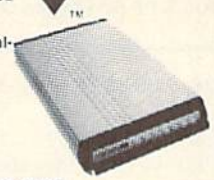
64C Computer	$CALL
C 128 D Computer Drive	$CALL
1541 II Disk Drive	$CALL
Colt PC	$CALL
1670 Modem	$CALL

64 Power Supply

The MW 701-A power supply made by Micro R&D features double fused systems, schematics, and a one-year warranty. Stay with the best, stay with Micro R&D.

$34.95

Cardinal™



• Low error data transmission and reception over standard dial-up telephone lines
• Hayes compatible with the universally-accepted AT command set
• Automatic Data Standard and Speed Adjust features

MB2400EX External Modem **$99.95**

"Our friendly sales staff can help with any questions you have!"

Why shop at Lyco Computer? Lyco Computer offers quality name brand computer products at prices 30% to 50% below retail. If you do not see the product you want advertised, call Lyco Marketing toll free. ***How do I know I will get the product I need?*** Our marketing staff receives continous formal training by our manufacturers. As thousands of people every week capitalize on our savings and services, we hope you too, will make Lyco Computer your first choice. ***What about warranty or service?*** Our Customer Service Department is available at (717) 494-1670 to assist you. We back all of our manufacturer's stated warranty terms. Before returning any item that appears to be defective, we ask that you call our Customer Service Department. ***Will you rush an item to me?*** We offer next day air, two day air, standard UPS, and postal international shipping services. Temporary shortages are normally filled within 10 days. ***How do I order?*** We have always accepted C.O.D. orders through UPS. Prepaid cash orders over $50 are shipped freight-free. For orders under $50, please add $3 for freight. Personal and company checks require a 4 week waiting period. Visa, Master Card and American express orders are accepted. for your convenience, but we cannot pass along the 4% discount offered for cash. Prices in this ad reflect cash prices.Purchase orders are accepted from Educational Institutions. We charge sales tax on deliveries in Pennsylvania. For APO, FPO, and international orders, add $5 plus 3% for priority mail. Advertised prices and availability are subject to change. Simply send your order to Lyco Computer, P.O. Box 5088, Jersey Shore, PA, 17740. Or, call 1-800-233-8760 or (717) 494-1030. Not responsible for typographical errors.

Sales: 1-800-233-8760 or 717-494-1030
Fax:717-494-1441
Hours: Mon.-Fri. 9a.m.-9p.m.
Sat. 10a.m.-6p.m.
Customer Service: 717-494-1670
Hours: Mon.-Fri. 9a.m.-5p.m.

VISA · MasterCard · American Express

ATTENTION EDUCATIONAL INSTITUTIONS:
If you are not currently using our educational service program, please call our representatives for details.

1-800-233-8760

Price Guarantee

Since 1981 we have led the industry by continuing to offer the lowest national prices while providing quality service. Many companies have come and gone trying to imitate our quality and service. If by some oversight, we do not have the lowest prices advertised on the products you desire, then we would appreciate the opportunity to rectify this oversight.

You might need to use both quotes and another delimiter (one at a time) to find *all* occurrences. (Printed text is usually in quotes, while remarks usually are not.)

With the demo program and subroutines still in memory, now type

```
FIND "TO"
```

and press return. This should list line 30 with the text TO in a different color. Note that the keyword TO (outside quotes) was not found. Typing

```
FIND :TO:
```

again should show line 60110.

If more than one match is found in a line, the line will be listed more than once, each time in a different color.

CHANGE

To alter text in your program listing, use the Change command. The syntax for Change is similar to that for Find, but a second string follows the "Find" string and a third delimiter is required. If quotes are used as the first and third delimiters, a colon should be used in the middle to prevent the second string from being tokenized.

Here are three examples of the Change syntax:

```
CHANGE .PRINT.PRINT#4,.
CHANGE "TON:TIN"
CHANGE :ER:EX:
```

The second example won't let the strings be tokenized, because the colon in the middle is accepted as a special delimiter. The third example shows how you might change a variable throughout a program. You might use this, for example, in a case where a program written for the C-64 is being updated to run in 128 mode.

You'll be prompted Y/N/E for Yes/No (change/don't change) or Exit at each match found. If you want all matches changed (are you really sure?), just hold down the Y key.

To avoid finding strings that are parts of other strings, use spaces in the text. For example, if you want to find IS, use " IS" to avoid finding "THIS".

To see a demonstration of Change, enter

```
CHANGE .Y2.Q.
```

When lines 50, 60, 60090 and 60110 are listed, one at a time, press Y after each prompt to change the variable; then, after you're done, list the program to see that the lines actually did change.

Change will turn a short string into a longer one or a long string into a shorter one, and it will adjust all pointers within the program. Note that both strings must be at least one character long.

Always use common sense and caution with the Change command; otherwise you may change more than you intended!

DISPLAY NOTES

When you're using either Find or Change, each line containing the requested string will be printed to the active output device, usually the screen. To help show the match on the line and avoid the editing problems caused by using reverse video (as with the 40-column Help command), I've made the string appear in a different color. If the matches are invisible on your screen, change the background or text color and try again.

After a line is listed, the remainder of the screen line is cleared to avoid confusion and aid in editing. The text can be highlighted and edited on the same line with no strange results.

If you're using an 80-column screen, you'll find that matches are always printed in uppercase. This is because I always work in upper/lowercase, so the uppercase makes matches even easier to spot, with no interference with editing.

To output to your printer, open the printer as you normally do and issue a CMD4 to send all output to it—for example,

```
OPEN 4,4,7:CMD4
```

Then press return and type your Find command as usual, and all lines containing matches will be printed out. To keep the program compatible with any printer, use the square brackets ([ ]) to enclose the match.

Sending output to the printer is useful mainly when more matches will be found than will fit on the screen.

OLD

If you accidentally "New" a program, the Old command will restore it for you. To see how Old works, type NEW, press return and list the demo program. To retrieve the program, type OLD on an empty line, press return and list the program again to confirm that it's been restored. The Old command must be used *before* you enter any lines after the New command!

If you "New" a program when AFCO isn't active, just boot AFCO.ML and type OLD to restore your program.

The AFCO commands are real time—and program—savers. I'm sure that once you try them, you'll always want them available to help write and edit your Basic 7.0 programs. R

Jim Borden is a tool maker by trade, a freelance programmer and a former RUN *Magic columnist.*

Listing 1. AFCO program. (Available on ReRun disk. See order card facing page 24.)

```
0 REM THIS LIST 1 CREATES (AND
  SHOULD NOT BE CALLED) AFCO.ML
                          :REM*69
5 OPEN 8,8,8,"AFCO.ML,P,W"
                          :REM*246
6 CT=0:PRINT"{SHFT CLR}":REM*56
10 READ A$:IF A$="-1" THEN CLOS
   E8:PRINT:PRINT"ALL DONE!":EN
   D                      :REM*129
12 PRINT"{HOME}READING LINE "+S
   TR$(CT):CT=CT+1        :REM*141
15 IF LEN(A$)<62 THEN 55
                          :REM*254
20 B$=MID$(A$,1,20)+MID$(A$,22,
   20)+MID$(A$,43,20)     :REM*242
25 FOR I=1 TO 30          :REM*181
30 C$=MID$(B$,(I*2)-1,2):H$=LEF
   T$(C$,1):L$=RIGHT$(C$,1)
                          :REM*209
35 H=VAL(H$):IF H$>"9" THEN H=A
   SC(H$)-55              :REM*85
40 L=VAL(L$):IF L$>"9" THEN L=A
   SC(L$)-55              :REM*136
45 BY=H*16+L:PRINT#8,CHR$(BY);
                          :REM*67
50 NEXT:GOTO 10           :REM*115
55 IF LEN(A$)<21 THEN B$=A$:GOT
   O 70                   :REM*184
60 IF LEN(A$)<42 THEN B$=LEFT$(
   A$,20)+RIGHT$(A$,(LEN(A$)-21
   )):GOTO 70             :REM*176
65 B$=LEFT$(A$,20)+MID$(A$,22,2
   0)+RIGHT$(A$,LEN(A$)-42)
                          :REM*140
70 FOR I=1 TO LEN(B$)/2:REM*221
75 C$=MID$(B$,(I*2)-1,2):H$=LEF
   T$(C$,1):L$=RIGHT$(C$,1)
                          :REM*140
80 H=VAL(H$):IF H$>"9" THEN H=A
   SC(H$)-55              :REM*56
85 L=VAL(L$):IF L$>"9" THEN L=A
   SC(L$)-55              :REM*84
90 BY=H*16+L:PRINT#8,CHR$(BY);
                          :REM*148
95 NEXT:GOTO 10           :REM*160
100 REM MACHINE LANGUAGE FOR AD
    D/FIND/CHANGE/OLD C-128 UTI
    LITY                  :REM*148
101 DATA 0415AD05033C915D00160*8
    D2215AD04038D2115A2*20A0158
    E04038C05036D         :REM*232
102 DATA 200D43AD00FF8DBF1AA2*F
    FE8BD9F1ADD0002F0F7*E003D00
    34CB719A2FFE8         :REM*208
```

```
1Ø3 DATA BDA21ADDØØØ2FØF7EØØ3*D
    ØØ34C581AA2FFE8BDA5*1ADDØØØ
    2FØF7EØØ4DØØ7          :REM*185
1Ø4 DATA A9ØØ8DB91AFØ15A2FFE8*B
    DA91ADDØØØ2FØF7EØØ6*FØØ16ØA
    9Ø18DB91ACAE8          :REM*25Ø
1Ø5 DATA BDØØØ2C92ØFØF8E88E8C*1
    58DBA1AA2FFE8BDØØØ2*DØØ16ØC
    DBA1AFØ1FA8AD          :REM*253
1Ø6 DATA BA1AC922DØ11CØ3ADØØD*8
    A186D8C15A8A92299ØØ*Ø2DØØ69
    89DØØØCDØD58E          :REM*245
1Ø7 DATA BB1AADB91AFØ31E88A18*6
    D8C158DCA15A2FFE8BD*ØØØ2DØØ
    16ØCDBA1AFØØ5          :REM*232
1Ø8 DATA 9D8ØØCDØEF8EBC1A8A38*E
    DBB1A8DBD1A3ØØ3A9ØØ*2CA9FF8
    DBE1AADBB1AFØ          :REM*124
1Ø9 DATA 12C93ØBØØE2CB91AFØØA*A
    DBC1AFØØ4C9319ØØ16Ø*ACB91AC
    8A2Ø3E8BDØØØ2          :REM*43
11Ø DATA CDBA1ADØF7881Ø4E8BD*Ø
    ØØ2DØE7AEBB1ACABDØØ*ØC9DØØØ
    2CA1ØF7AEB91A          :REM*233
111 DATA FØØDAEBC1ACABD8ØØC9D*8
    ØØ2CA1ØF7A52D85Ø7A5*2E85Ø8A
    9Ø08DCØ1A8DC1          :REM*1Ø4
112 DATA 1AADB91ADØØ88DØØFF2Ø*E
    1FFFØ29A93F8DØØFFA5*Ø785Ø5A
    5Ø885Ø6AØØØ18          :REM*83
113 DATA B1Ø58DC61A6DCØ1A85Ø7*C
    8B1Ø5486DC11A85Ø868*ØDC61AD
    ØØCADBF1A8DØØ          :REM*1Ø5
114 DATA FFA9ØØ8DØØØ26Ø2Ø8A18*8
    DC71AA2Ø3E8BDØØØCDØ*ØEAØØØ1
    8A5Ø791Ø5C8A5          :REM*23
115 DATA Ø891Ø5DØA2C922DØØA48*A
    DC71A498Ø8DC71A68CD*ØØØ2DØD
    9ADBA1AC922FØ          :REM*17Ø
116 DATA Ø3A9ØØ2CA98ØCDC71ADØ*C
    88EEC16A2ØØE8ECBB1A*FØ18BDØ
    ØØ2C922DØØA48          :REM*239
117 DATA ADC71A498Ø8DC71A68DD*Ø
    ØØCDØ67FØE2AEØ2ØCAD*Ø3ØC2Ø5
    D17A92Ø2ØD2FF          :REM*38
118 DATA AØØØ84F48CCB1AAØØ3C8*8
    CC81A2Ø4B18B9ØØØCFØ*241ØØF2
    4F43ØØBC9FFFØ          :REM*164
119 DATA Ø72ØD317A9ØØFØE3C922*D
    ØØ848A5F4498Ø85F468*2ØD2FFA
    9Ø1DØDØA59AC9          :REM*159
12Ø DATA Ø3DØØ32Ø3A182ØB219AD*B
    91AFØØD2ØAA1818ADEC*166DBD1
    A8DEC16AEEC16          :REM*212
121 DATA 4C97168EC21A8DC31AA9*Ø
    Ø8DC61AA21ØA9272Ø9Ø*17A2E8A
    9Ø32Ø9Ø17A264          :REM*93
122 DATA A9ØØ2Ø9Ø17A2ØAA9ØØ2Ø*9
    Ø17AEC21AA9ØØEEC61A*2ØC9176
    Ø8EC41A8DC51A          :REM*192
123 DATA A2ØØE838ADC21AEDC41A*8
    DC21AADC31AEDC51A8D*C31ABØE
    AADC21A6DC41A          :REM*2Ø1
124 DATA 8DC21AADC31A6DC51A8D*C
    31ACA8ADØØ5ADC61AFØ*Ø9EEC61
    A8AØ93Ø2ØD2FF          :REM*173
125 DATA 6Ø8CC61AC9FEDØØ6A9Ø8*A
    Ø46DØØ8C9CEDØ1BA9C8*AØ46EEC
    61ACECB1A8524          :REM*233
126 DATA 8425EEC81AACC81AB9ØØ*Ø
    CAACADØØCA2168624A2*4486253
    8E97FAAAØØØCA          :REM*113
127 DATA FØØEB1241ØØ3CAFØØ7C8*D
    ØF6E625DØF2C8DØØ2E6*25B1243
    ØØA2ØD2FFC8DØ          :REM*137
128 DATA F6E625DØF2297FACC61A*2
    ØD2FF6ØA59AC9Ø3DØØA*A91B2ØD
    2FFA9512ØD2FF          :REM*163
129 DATA 6ØCCEC16DØ22ADBB1A8D*C
    B1AEECB1AA59AC9Ø3DØ*ØEA6F18
    E7E18E88A29ØF          :REM*171
13Ø DATA 85F1189ØØ5A95B2ØD2FF*C
    ECB1ADØ12A59AC9Ø3DØ*Ø7A9ØØ8
    5F1189ØØ5A95D          :REM*68
131 DATA 2ØD2FF6ØA93F8DØØFFAØ*Ø
    2B1Ø599ØØØCC8B1Ø599*ØØØCC8B
    1Ø599ØØØCDØF8          :REM*251
132 DATA A9ØØ8DØØFF6ØA2ØØBDA9*1
    A2ØD2FFE8EØ1ØDØF5A5*9AC9Ø3D
    ØØ5A9912ØD2FF          :REM*1Ø7
133 DATA 2ØE4FFC94EFØ1ØC959FØ*1
    4C945DØF1A9ØØ8DØØØ2*8DB91A6
    8682Ø3A184C57          :REM*15
134 DATA 172Ø3A18A93F8DØØFFA9*Ø
    Ø8D6B198D6719ADBD1A*DØØ34C7
    A191ØØA49FF18          :REM*98
135 DATA 69Ø18D6719DØØ38D6B19*1
    8ADEC1665Ø58524A5Ø6*69ØØ852
    5AD11128527AD          :REM*37
136 DATA 1Ø128526186DBD1A8D1Ø*1
    2AD11126DBE1A8D1112*18ADBD1
    A6DCØ1A8DCØ1A          :REM*252
137 DATA ADBE1A6DC11A8DC11A18*A
    DBD1A65Ø785Ø7ADBE1A*65Ø885Ø
    82CBD1A3ØØFA2          :REM*237
138 DATA Ø1B52448B52695246895*2
    6CA1ØF3AØØØB124AØØØ*9124A42
    4C426DØ25A425          :REM*23Ø
139 DATA C427DØ1F18ADEC1665Ø5*8
    524A5Ø669ØØ8525AØØØ*B98ØØ29
    124C8CCBC1ADØ          :REM*33
14Ø DATA F52Ø8A186Ø2CBD1A3ØØB*A
    524DØØ2C625C6244C66*19E624D
    ØØ2E6254C6619          :REM*43
141 DATA A9ØD4CD2FFCAE8BDØØØ2*C
    92ØFØF8E88ECB198DBA*1AA2FFE
    8BDØØØ2DØØ16Ø          :REM*99
142 DATA CDBA1AFØØ59DØØØCDØEF*8
    EBB1AA9ØØ8DØØFFADBB*1AA2ØØA
    ØØC2ØBDFFA9ØØ          :REM*2Ø4
143 DATA AA2Ø68FFA9ØØA2Ø8A82Ø*B
    AFF38AD1Ø12E9Ø2AAAD*1112E9Ø
    ØA8A9ØØ2ØD5FF          :REM*3Ø
144 DATA BØØC8E1Ø128C11122Ø4F*4
    F4C8316249Ø1Ø182ØB2*19A2ØØB
    D7D48Ø8297F2Ø          :REM*1Ø3
145 DATA D2FFE8281ØF32ØB2194C*8
    3162ØB219A9Ø82ØB4FF*A96F2Ø9
    6FF2ØA5FFC9ØD          :REM*219
146 DATA FØØ52ØD2FFDØF42ØD2FF*2
    ØABFF4C8316A93F8DØØ*FFA52D8
    524A52E8525AØ          :REM*34
147 DATA ØØB124C81124FØØ34C83*1
    6A525912488B124DØØ9*E6Ø8A5Ø
    8C9Ø3FØØB2C84          :REM*11
148 DATA Ø8E624DØEDE625DØE9A9*Ø
    Ø8DØØFFE624A624DØØ2*E625A42
    54CØE1A414444          :REM*198
149 DATA 4F4C4446494E44434841*4
    E47453F2Ø592F4E2F45*2ØØ7ØD
                           :REM*1Ø5
15Ø DATA -1                :REM*4
```

Listing 2. AFCO demo program. (Available on ReRun disk. See order card facing page 24.)

```
1Ø REM AFCO DEMO PROGRAM:REM*22
2Ø SW=4Ø:AZ$="THIS IT A SHORT D
   EMO":GOSUB 6ØØØØ:REM PRINT W
   ITH 1ST SUB             :REM*12
3Ø AZ$="TO SHOW THE AFCO":GOSUB
    6ØØØØ                  :REM*141
4Ø AZ$="FUNCTIONS.":GOSUB 6ØØØØ
                           :REM*83
5Ø X9$="{UP ARROW}":Y2=SW-1:R9=
   1:GOSUB 6Ø1ØØ:REM CHAR REPEA
   T WITH 2ND SUB          :REM*6
6Ø X9$="=":Y2=2Ø:R9=Ø:GOSUB 6Ø1
   ØØ                      :REM*156
7Ø END                     :REM*198
8Ø REM{2 SPACEs}--SUBS---
                           :REM*72
```

Listing 3. First demo subroutine. (Available on ReRun disk. See order card facing page 24.)

```
5998Ø REM "SUB 6ØØØØ" - CENTER
      STRING               :REM*6
5999Ø REM STRING=AZ$:SCREEN WID
      TH=SW                :REM*112
6ØØØØ PRINTSPC((SW-LEN(AZ$))/2)
      AZ$:RETURN           :REM*18
```

Listing 4. Second demo subroutine. (Available on ReRun disk. See order card facing page 24.)

```
6ØØ8Ø REM "SUB 6Ø1ØØ" - REPEAT
      CHARS                :REM*17
6ØØ9Ø REM CHAR=X9$:NUMBER=Y2:RE
      VERSE ON IF R9<>Ø:REM*124
6Ø1ØØ IFR9 THENPRINT"{CTRL 9}";
                           :REM*82
6Ø11Ø FOR X9=1 TO Y2:PRINTX9$;:
      NEXT                 :REM*93
6Ø12Ø PRINT:RETURN         :REM*98 ■
```

Doing the Alphabet Shuffle

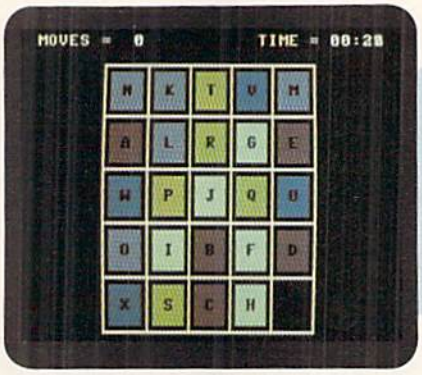
Take enough steps in the right directions to put this letter puzzle in order.

By CHARLES PHOENIX

Alphabet Shuffle is a strategy game in which you alphabetize a grid of randomly placed letters by swapping them, one at a time, with a blank space. It's based on the little sliding-number puzzles you probably know and offers three skill levels, with eight, 15 and 24 letters. You move the letters with a joystick plugged into port 2. The program (Listing 1) is written entirely in Basic.

At the opening screen, you select your choice of skill level with the joystick and press the firebutton to call up the brief on-screen instructions. The program sets up your puzzle, and when it appears, press the firebutton to start play.

You can move only those letters that are adjacent to the blank space. Decide which letter you want to move, then press the joystick in the direction the letter should go, and it will swap places with the blank space. As you play, your elapsed time and the number of moves you've made are continuously shown at the top of the screen.



You have to plan the moves well in advance to arrange the letters in order.

The game is over when all the letters are in alphabetical order and the blank space is last. After the closing score-and-time display, you can press the firebutton to play again at the same or another level. You can also press the firebutton at any time during a game to quit and bring up another puzzle. Remember that all moves are related, so it's important to think ahead. R

Charles Phoenix is a Canadian who was introduced to computers in grade school and has been programming ever since. He says he's thinking about upgrading his C-64 to an Amiga 2000.

Running Instructions: **Type in Listing 1, save it to disk and run it.**

Listing 1. Alphabet Shuffle program. (Available on ReRun disk. See order card facing page 24.)

```
10Ø REM ALPHABET SHUFFLE                :REM*2Ø6
1Ø5 REM BY CHARLES PHOENIX (Ø1/
    89)                                 :REM*121
11Ø REM                                 :REM*253
112 GOTO45Ø:REM GOTO SETUP              :REM*48
114 REM                                 :REM*Ø
135 PRINTLEFT$(DN$,23);:REM PRI
    NT PROMPT AND WAIT FOR FIRE
                                        :REM*19Ø
14Ø PRINT"{CTRL 2}{5 SPACEs}PRE
    SS FIRE BUTTON TO CONTINUE.
    "                                   :REM*5Ø
145 IF(PEEK(JY)AND16)/16THEN145
                                        :REM*168
15Ø RETURN                              :REM*37
155 REM                                 :REM*43
17Ø PRINTLEFT$(DN$,VP+TX*4-4):R
    EM PRINT LETTER AT (X,Y)
                                        :REM*16
175 IFA$=""ORA$=" "THENPOKE646,
    Ø:GOTO185                           :REM*124
18Ø POKE646,2+(ASC(A$)-65)/GN
                                        :REM*7
185 PRINTSPC(HP+TY*4-3);"{CTRL
    9}{3 SPACEs}{3 CRSR LFs}{CR
    SR DN} ";RIGHT$(" "+A$,1);"
     {3 CRSR LFs}{CRSR DN}{3 SP
    ACEs}{CTRL Ø}"                      :REM*113
19Ø RETURN                              :REM*77
195 REM                                 :REM*83
21Ø M=Ø:TI$="ØØØØØØ":REM *** MA
    IN LOOP                             :REM*22Ø
215 X=GN:Y=GN                           :REM*189
22Ø OX=X:OY=Y                           :REM*126
225 REM                                 :REM*113
23Ø PRINT"{HOME}{CTRL 8}{3 SPAC
    Es}MOVES = {CTRL 2}";M
                                        :REM*118
235 PRINT"{HOME}{CTRL 8}{24 CRS
    R RTs}TIME = {CTRL 2}";MID$
    (TI$,3,2);":";RIGHT$(TI$,2)
                                        :REM*181
24Ø REM                                 :REM*126
245 IF(PEEK(JY)AND16)/16=ØTHEN3
    85                                  :REM*39
25Ø REM                                 :REM*136
255 JD=NOTPEEK(JY)AND15:REM*241
26Ø IFJD=1ORJD=2THENX=X-(JD=1)+
    (JD=2):IFX>ØANDX<=GNTHEN28Ø
                                        :REM*37
265 IFJD=4ORJD=8THENY=Y-(JD=4)+
    (JD=8):IFY>ØANDY<=GNTHEN28Ø
                                        :REM*174
27Ø X=OX:Y=OY:GOTO23Ø                   :REM*94
275 REM                                 :REM*163
28Ø M=M+1:REM INCREASE # OF MOV
    ES                                  :REM*218
285 REM                                 :REM*173 ►
```

RUN it right: **C-64; joystick**

ESTABLISHED 1967

MONTGOMERY GRANT

RUN 4/90

OUTSIDE USA & CANADA..CALL
(718)692-0790
FOR CUSTOMER SERVICE
Call:Mon-Wed. 9-5, Thurs. 9-6,
Fri. 9am-4:30pm (718)692-1148

Retail Outlet: Penn Station, Main Concourse
(Beneath Madison Square Garden) NYC, NY 10001
Store Hours: Mon-Thurs 9-7:30/Fri 8:30-4:00/Sat-Closed/Sun 9:30-7
FOR ORDERS & INFORMATION IN USA & CANADA
1-800-759-6565

OR WRITE TO:
Montgomery Grant; Mail
Order Dept. P.O. Box 58
Brooklyn, NY 11230
FAX NO. 7186923372
TELEX 422132 MGRANT

Order Hours: Mon-Thurs, 9:00am-7pm / Fri, 9:00am-4:00pm / Sat-Closed / Sun, 9:30am-6:00pm(ET)

NO SURCHARGE FOR CREDIT CARD ORDERS/WE INVITE CORPORATE & EDUCATIONAL CUSTOMERS
DISCOUNTS FOR QUANTITY ORDERS / RUSH SERVICE AVAILABLE / TOLL FREE TECHNICAL SUPPORT

AMIGA

AMIGA 500

Amiga 500 w/512K · Built-in 3.5" Disk Drive · Mouse · System Software

$519

AMIGA 500
RGB COLOR PACKAGE

Amiga 500 w/512K · Built-in 3.5" Disk Drive · Mouse · RGB Color Monitor System Software

$719

AMIGA 500 With 1084.....$789
AMIGA 500 With 1084 & 1010 3.5" Drive.....$929

COMMODORE AMIGA™

AMIGA 2000

- A-2000 Computer w/Keyboard
- 1MB Expandable to 9MB
- Built-in 3.5" Disk Drive Mouse
- System Software

$1269

AMIGA 2000 w/RGB COLORMONITOR.....$1469
AMIGA 2000 w/1084 Monitor.....$1539
AMIGA 2000 w/SEAGATE 40MB H.D.....$1759
AMIGA 2000 H.D.....$1879
AMIGA 2500/30(25MHz.).....$3229

AMIGA PERIPHERALS

AMIGA 1010 Disk Drive.....$139
20, 30, 40, 60, 80 & 100MB Hard Drives for AMIGA 500,2000.....IN STOCK
A-2088D Bridge Card.....$489
A-2286D AT Bridge Board.....$1079
A-501 Memory Expansion.....$149

ALL OTHER AMIGA PERIPHERALS & HARD DRIVES IN STOCK

C64C commodore C128D

$126.95

INCLUDES:
QUANTUM LINK SOFTWARE & MEMBERSHIP
1 JOYSTICK
(A $19.95 VALUE)

C-128D with Built-In Disk Drive
INCLUDES:
2 FREE GAMES (A $39.95 VALUE)

$419

COMMODORE C 64-C
STARTER PACKAGE

C/64-C with Excellerator Plus FSD-2 Disk Drive · Quantum Link Software & Membership · 1 Joystick

$239

COMMODORE C 64-C
TEST PILOT PACKAGE

- Commodore C-64/C Computer
- Commodore 1541-II Disk Drive
- Ace Joystick

5 SOFTWARE PACKAGES INCLUDE:
Advance Tactical Fighter
Infiltrator II
Harrier
Crazy Cars
Tomohawk

$279

COMMODORE C 64-C
COMPLETE PACKAGE

- Commodore C-64/C Computer
- Commodore 1541 Disk Drive
- Commodore Color Printer
- 12" Monitor
- Quantum Link Software & Membership

$319

COMMODORE C 64-C
COLOR PACKAGE

- Commodore C-64/C Computer
- Commodore 1541 Disk Drive
- Commodore Color Printer
- Color Monitor
- Quantum Link Software & Membership

$429

1571 Disk Drive
CALL

1581 Disk Drive
$199.95

1541II Disk Drive
Includes Free Game! (a $19.95 Value)
$159.95

Excellerator Plus FSD-2 Disk Drive
$129.95

1084 Monitor
$279.95

1802D Monitor
$189.95

Magnavox 13" RGB Color Monitor
$225.95

Magnavox 13" Color Composite Monitor
$174.95

COMMODORE 128D
COMPLETE PACKAGE

- Commodore C/128-D Computer with
- Built-in Disk Drive
- Commodore Color Printer
- 12" Monitor

$479

COMMODORE 128D
DELUXE PACKAGE

- Commodore C/128-D Computer with
- Built-in Disk Drive
- Magnavox RGB Color Monitor
- Commodore Color Printer

$629

C/128-D Complete w/1084 Monitor **$689**

1700 RAM Expansion.....$99.95
#1764 Expansion Module.....$114.95
XETEC S. Graphix Jr. Interface.....$29.95
XETEC S. Graphix Sr. Interface.....$49.95
XETEC Supergraphix Gold.....$74.95
CARDCO G-WIZ Interface.....$49.95
C-64/C -64C Power Supply.....$29.95
C-1660 Modem.....$19.95
C-1670 Modem.....$79.95
COMMODORE 1350 Mouse.....$26.95
COMMODORE 1351 Mouse.....$49.95.
XETEC Lt. Kernal 20MB Hard Drives for:
C-64C.....$729
C-128 & 128D.....$849
XETEC 40MB Hard Drive for:
C-128.....$999
C-64C&128D.....$1199

WE CAN RECONFIGURE ANY OF OUR COMPUTER PKGS. TO YOUR SPECIFICATIONS. CALL FOR INFORMATION.

commodore

PC-40III
IBM AT COMPATIBLE

$1399

80286/12MHz · 1MB RAM · 40MB Hard Drive 1.2MB Floppy · Video Graphics Card · MS DOS 3.3 · GW Basic

PRINTERS

HEWLETT PACKARD
HP Deskjet.....$569.95
HP Deskjet Plus.....$669.95

EPSON
LX-810.....$179.95
LQ-510.....$317.95
FX-850.....$329.95

STAR
NX-1000C.....$164.95
NX-1000II.....$164.95
NX-1000 Rainbow.....$207.95
NX-1000C Rainbow.....$207.95
NX-2410.....$274.95
XR-1000.....$319
XR-1500.....$409
XB-2410.....$409
COLOR OPTION KIT FOR XB, XR PRINTERS.....CALL

NEC
P2200XE.....$309.95
P5200.....$479.95

OKIDATA
OKIMATE 20.....$139.95
OKIDATA 172.....$189.95
OKIDATA 180.....$219.95
OKIDATA 182 TURBO.....$219.95
OKIDATA 320.....$324.95
OKIDATA 360.....$349.95
OKIDATA 390.....$449.95
OKIDATA 321.....$449.95

Panasonic
KXP-1180.....$164.95
KXP-1191.....$214.95
KXP-1124.....$289.95
KXP-1624.....$429.95

commodore
MPS-1250.....$189

CITIZEN
GSX-140.....$314.95
COLOR OPTION KIT.....CALL

HYUNDAI

MODEL 286E
640K RAM Expandable to 1MB
12 MHz. · MS DOS 3.3

$679

SAME WITH SEAGATE 20MB HARD DRIVE AND CONTROLLER CARD.....$929
SAME WITH SEAGATE 40MB HARD DRIVE AND CONTROLLEFR CARD.....$999

EPSON EQUITY II+

IBM AT COMPATIBLE

Keyboard · 640K RAM · 80286 Microprocessor · 1.2MB Floppy Drive · MS DOS 3.3 & GW Basic Wordprocessing, Database & Spreadsheet Software

$929

SAME WITH SEAGATE 20MB HARD DRIVE....$1169
SAME WITH SEAGATE 40MB HARD DRIVE...$1259

Panasonic FX-1650

IBM XT COMPATIBLE PACKAGE

640K · 720k Floppy Drive · Parallel/ Serial Ports · MS DOS 3.3 · GW Basic Word Processing, Database & Spreadsheet Software · 12" Monitor

$499

SAME w/SEAGATE 20MB.....$739
30, 40MB PACKAGES.....CALL

Certified Check, Bank Check, Money Orders, Approved PO's, Mastercard, Visa, Amex, Optima, Diner's Club, Carte Blanche, C.O.D.'s accepted. Please call before submitting P.O.'s. No additional surcharge for credit card orders. Non-certified checks must wait 4-6 weeks for clearance. Prices and availability subject to change without notice. Not responsible for typographical errors. Return of defective merchandise must have prior return authorization number or returns will not be accepted. IBM, XT/AT are registered trademarks of International Business Machines Corp. Please add 5% shipping & handling (min $8). Orders over $1200 are discounted to 5% shipping & handling. (Over $3000 discounted to 2%). Canadian orders please call for shipping rates. APO/FPO orders please add 10% shipping & handling. All APO/FPO are shipped first class priority air. All orders can be shipped Air Express. Call for details. D.C.A. #800233

ALPHABET SHUFFLE

```
300 TX=X:TY=Y:A$=" ":GOSUB1700:REM SWAP NEW SQUARE WITH OLD SQUARE :REM*161
305 TX=OX:TY=OY:A$=PG$(X,Y):GOSUB1700 :REM*252
310 PG$(OX,OY)=PG$(X,Y):PG$(X,Y)=" " :REM*8
315 REM :REM*203
330 C=GN*GN:REM CHECK FOR WINNER :REM*104
335 FORI=1TOGN :REM*48
340 : FORJ=1TOGN :REM*107
345 :{3 SPACEs}IFPG$(I,J)=CG$(I,J)THENC=C-1 :REM*100
350 : NEXT :REM*158
355 NEXT:IFCTHEN2200 :REM*95
365 REM :REM*253
380 PRINT"{CTRL 2}{SHFT CLR}{7 CRSR DNs}{4 CRSR RTs}CONGRATULATIONS....YOU'VE DONE IT ":GOTO3900:REM END PRG :REM*34
385 PRINT"{CTRL 2}{SHFT CLR}{7 CRSR DNs}{9 CRSR RTs}GIVING UP......TSK, TSK" :REM*249
390 PRINT"{3 CRSR DNs}{2 SPACEs}THE CURRENT GAME TIME IS.....: "; :REM*26
395 PRINT"{CTRL 8}";MID$(TI$,3,2);":";RIGHT$(TI$,2):REM*95
400 PRINT"{CTRL 2}{2 CRSR DNs}{2 SPACEs}THE CURRENT # OF MOVES IS...:{CTRL 8}";M :REM*31
405 REM :REM*38
410 FORI=1TO500:NEXT:REM SMALL DELAY :REM*188
415 GOSUB135:REM WAIT FOR FIRE BUTTON :REM*201
420 GOTO4800:REM GOTO SETUP :REM*116
425 REM :REM*58
445 REM :REM*78
450 DIM CG$(5,5),PG$(5,5):REM INITIALIZE :REM*152
455 JY=56320:REM FOR JOYSTICK #1 CHANGE 56320 TO 56321 :REM*80
460 DN$="{HOME}{25 CRSR DNs}" :REM*237
465 REM :REM*98
480 POKE53280,0:POKE53281,0:REM TITLE SCREEN :REM*128
485 PRINT"{SHFT CLR}{4 CRSR DNs}{CTRL 2}{10 SPACEs}THE ALPHABET SHUFFLE" :REM*2
490 PRINT"{CTRL 8}{9 SPACEs}{22 COMD Ys}{CTRL 2} :REM*156
495 PRINT"{2 CRSR DNs}{2 SPACEs}1) {CTRL 8}BEGINNER GAME..... {CTRL 2}3 BY 3 GRID :REM*0
500 PRINT"{2 CRSR DNs}{2 SPACEs}2) {CTRL 8}INTERMEDIATE GAME.... {CTRL 2}4 BY 4 GRID :REM*137
505 PRINT"{2 CRSR DNs}{2 SPACEs}3) {CTRL 8}EXPERT GAME..... {CTRL 2}5 BY 5 GRID :REM*125
510 PRINT"{3 CRSR DNs} MOVE JOYSTICK (UP/DOWN) TO SELECT GAME :REM*244
515 PRINT"{CRSR DN}{7 SPACEs}PRESS FIRE BUTTON TO ENTER :REM*106
520 GN=3:GOSUB6000:REM SELECT GAME W/JOYSTICK :REM*39
525 REM :REM*158
540 IF(PEEK(JY)AND16)/16=0THEN650 :REM*102
545 JD=NOTPEEK(JY)AND15 :REM*17
550 IFJD<>1ANDJD<>2THEN540 :REM*100
555 GOSUB5800:GOTO5400 :REM*168
575 REM :REM*204
580 PRINT"{CTRL 1}";:GOSUB6100 :REM*17
585 GN=GN+(JD=1)-(JD=2) :REM*63
590 IFGN<3THENGN=5 :REM*163
595 IFGN>5THENGN=3 :REM*182
600 PRINT"{CTRL 8}"; :REM*184
605 REM :REM*238
610 PRINTLEFT$(DN$,5+(GN-2)*3); :REM*248
615 PRINT" {SHFT U}{36 SHFT *s}{SHFT I} :REM*47
620 PRINT" {SHFT -}{36 CRSR RTs}{SHFT -} :REM*194
625 PRINT" {SHFT J}{36 SHFT *s}{SHFT K} :REM*95
630 RETURN :REM*7
635 REM :REM*9
650 PRINT"{SHFT CLR}{2 CRSR DNs}{CTRL 2}{3 SPACEs}INSTRUCTIONS FOR ALPHABET SHUFFLE": REM INSTRUCTION SCREEN :REM*84
655 PRINT"{CTRL 8}{2 SPACEs}{35 COMD Ys}{CTRL 2} :REM*224
660 PRINT"{CRSR DN}{4 SPACEs}THE OBJECT OF THIS GAME IS QUITE :REM*69
665 PRINT"{CRSR DN}{3 SPACEs}SIMPLE. JUST REARRANGE THE LETTERS :REM*246
670 PRINT"{CRSR DN}{8 SPACEs}INTO {CTRL 8}ALPHABETICAL ORDER.{CTRL 2} :REM*92
675 PRINT"{13 SPACEs}{18 COMD Ts} :REM*193
680 PRINT"{CRSR DN}{4 SPACEs}WHEN THE GAME IS COMPLETED EACH :REM*230
685 PRINT"{CRSR DN}{6 SPACEs}ROW WILL BE THE SAME COLOR. :REM*197
690 PRINT"{2 CRSR DNs}{5 SPACEs}TO QUIT PLAYING AND TRY AGAIN :REM*250
695 PRINT"{CRSR DN}{9 SPACEs}PRESS THE FIRE BUTTON:REM*117
700 PRINT"{2 CRSR DNs}{CTRL 8}{7 SPACEs}PLEASE WAIT.....SETTING UP{HOME} :REM*86
705 REM :REM*83
720 FORI=1TOGN:REM SETUP WINNING GRID :REM*111
725 : FORJ=1TOGN :REM*245
730 :{3 SPACEs}CG$(I,J)=CHR$(65+(I-1)*GN+(J-1)) :REM*144
735 :{3 SPACEs}PG$(I,J)=" " :REM*45
740 : NEXT :REM*38
745 NEXT:CG$(GN,GN)=" " :REM*99
755 REM :REM*129
770 FORI=65TO63+GN*GN:REM SETUP PLAYING GRID :REM*169
775 : X=INT(RND(1)*(GN-1)+1.5) :REM*10
780 : Y=INT(RND(1)*(GN-1)+1.5) :REM*13
785 : IFX*Y=GN*GNTHEN775 :REM*100
790 : IFPG$(X,Y)<>" "THEN775 :REM*201
795 : PG$(X,Y)=CHR$(I) :REM*215
800 NEXT :REM*161
820 GOSUB135:REM WAIT FOR FIRE BUTTON :REM*102
825 REM :REM*203
830 HP=((38-GN*4)/2):VP=((26-GN*4)/2) :REM*255
840 REM :REM*212
845 PRINT"{SHFT CLR}{CTRL 8}";LEFT$(DN$,VP);:REM PRINT FINISHED GRID :REM*119
850 PRINTSPC(HP);"{COMD A}";RIGHT$("{3 SHFT *s}{COMD R}{3 SHFT *s}{COMD R}{3 SHFT *s}{COMD R}{3 SHFT *s}{COMD R}{3 SHFT *s}{COMD S}",4*GN) :REM*151
855 FORI=1TOGN :REM*74
860 : FORJ=1TO3 :REM*126
865 :{3 SPACEs}PRINTSPC(HP);"{SHFT -}";RIGHT$("{3 SPACEs}{SHFT -}{3 SPACEs}{SHFT -}{3 SPACEs}{SHFT -}{3 SPACEs}{SHFT -}{3 SPACEs}{SHFT -}", 4*GN) :REM*190
870 : NEXT :REM*160
875 : PRINTSPC(HP);"{COMD Q}";RIGHT$("{3 SHFT *s}{SHFT +}{3 SHFT *s}{SHFT +}{3 SHFT *s}{SHFT +}{3 SHFT *s}{SHFT +}{3 SHFT *s}{COMD W}",4*GN) :REM*67
880 NEXT :REM*241
885 PRINT"{CRSR UP}";SPC(HP);"{COMD Z}";RIGHT$("{3 SHFT *s}{COMD E}{3 SHFT *s}{COMD E}{3 SHFT *s}{COMD E}{3 SHFT *s}{COMD E}{3 SHFT *s}{COMD X}",4*GN) :REM*196
890 REM :REM*13
905 FORTX=1TOGN:REM PRINT GRID LETTERS :REM*160
910 : FORTY=1TOGN :REM*41
915 :{3 SPACEs}A$=PG$(TX,TY) :REM*235
920 :{3 SPACEs}GOSUB1700 :REM*76
925 : NEXT :REM*223
930 NEXT :REM*32
935 REM :REM*50
940 GOTO2100:REM GOTO MAIN LOOP :REM*69 ■
```

BRiWALL BRiWALL

P.O. Box 129/58 Noble Street
Kutztown, PA 19530

24 Hour FAX Line 1-215-683-8567
Customer Service 1-215-683-5433
Technical Support 1-215-683-5699

CALL
1-800-638-5757
Outside the USA (1-215-683-5661)

VISA MasterCard

PLEASE COME VISIT US!
Monday - Friday 9AM-6PM EST
Saturday 9AM-12 Noon EST

ACCESSORIES

Apro Extender 64 User Ribbon	$19
Aprospan 4 Slot Cartridge Holder	25
Covers	call
Final Cartridge V3	49
Joysticks	call
Leroy's Cheatsheet 64 each	3
Leroy's Cheatsheet 128 each	7
Lightpen-Model 184c	39
Mach 128 Cartridge	35
Minimodem C (1200 Baud)	**55**
Minimodem C 2400 Baud	**79**
Mouse 1351 Commodore C64/C128	40
Mouse M3 (1351 substitute)	39
Paper	call
Passport Midi Interface 64/128	98
Power Supply - C128 -Repairable	55
Printer Intfce G-Wiz	29
Printer Intfce Super Graphic Senior	59
Printer Intfce Super Graphic GOLD	89
Quick Brown Box 64K	95
Quick Brown Box 128K	**163**
Quick Brown Box 256K	**279**
RAM Expander 1764 (for C64)	135
RS232 Deluxe Interface	39
Ribbons	call
Ribbon Renew - Re-Ink w/no Equip	5
Video RAM 64K Cartridge (FULL)	50
Warpspeed 128 / 64	35

BOOKS

1541 Repair & Maint. Handbook	$16
1541 Troubleshoot & Repair Guide	17
1571 Internals+	17
Anatomy of C64+	17
C128 Internals+	17
C128 Programmer's Ref. Guide	20
C128 Tips & Tricks	17
C128 Troubleshooting & Repair	17
C64 Tips & Tricks	17
C64 Troubleshoot & Repair Guide	17
CPM User's Guide	17
CSM Prog Protection Manual 1	**24**
CSM Prog Protection Manual 2	**29**
GEOS Inside & Out+	17
GEOS Programmer's Ref Guide	17
GEOS Tips & Tricks+	15
K Jax Book Revealed 3	23
Lou Sanders Tricks & Tips	16
Machine Language 64+	13
Superbase The Book 64/128	15
Twin Cities 128 Compendium #1	15
+means that a disk is available	call

GENERAL BUSINESS

CMS Accounting/128	129
CMS Inventory Module 128	53
Fleet System 4	52
Fontmaster 128 w/Speller	30
Fontmaster II/64	29
KFS Accountant 128	109
Leroy's Label Maker	24
Microlawyer	39
Paperclip 3	39
Paperclip Publisher	39
Personal Portfolio Manager 64	29
Pocket Filer 2	29
Pocket Planner 2	29
Pocket Superpak 2 (Digital)	67
Pocket Writer 3	**46**
Superbase/Superscript/book 128 pak	69
Superbase/Superscript/Book 64 pak	59
Swiftax 64 - Income Tax Prep	**37**
Swiftcalc 64 w/Sideways	17
Technical Analysis System 64	29
Wordpro 128 w/Speller&Filepro	30
Wordpro 64 w/Speller&Turbo Load	30
Wordwriter 4 for C64	30
Write Stuff 128 w/spellchecker	27
Write Stuff 64 w/spellchecker	22
Write Stuff Busnss/Legl Templates	10

EDUCATION

Alphabet Zoo	$18
Big Bird's Special Delivery	9
Calculus by Numeric Methods	27
Counting Parade	6
Designasaurus	20
Easy Sign	17
Ernie's Big Splash	9
Ernie's Magic Shapes	9
Evelyn Wood Dynamic Reader	17
Grandma's House/64	6
Grover's Animal Adventure	9
Jungle Book (Reading 2)	19
Learn The Alphabet	6
Linkword:German	19
Linkword:French 2	19
Linkword:Spanish	19
Math (First Men on Moon)	19
Mavis Beacon Teaches Typing /C64	30
Mental Blocks	10
Morse Code Trainer	5
Numbers Show (The)	10
Peter Rabbit (Reading 1)	19
Rocky's Boots	23
SAT Complete (Hayden SAT Prep)	26
Sky Travel	33
Stickybear ABC'S	27
Stickybear Numbers	27
Stickybear Typing	37
Where in Europe Carmen Sandiego	27
Where in USA is Carmen Sandiego	27
Where in World Carmen Sandiego	25
Widham Classics	12

ENTERTAINMENT

1943: Battle of Midway	$20
AD&D - Champions of Krynn	**27**
AD&D - Curse of the Azure Bonds	27
AD&D - Dragons of Flame	**21**
AD&D - Heroes of the Lance	22
AD&D - Pool of Radiance	27
AD&D - War of the Lance*	**27**
After Burner	**23**
Altered Beast	**23**
Arcade Mega Hits	**23**
Aussie Games	**20**
B.A.T.	**27**
Ballistix	**20**
Batman - The Movie	**20**
Battle Chess	**29**
Beyond Dark Castle	**20**
Beyond the Black Hole	**20**
Blue Angels	**20**
C128 80 Col Fun & Games Pack	**45**
C64 Games Spectacular Package	**21**
Caveman Ugh*lympics	21
Chessmaster 2100	25
Clue: Master Detective	**22**
Death Bringer	**21**
Double Dragon II	**23**
Dragon Wars	**30**
Eye Of Horus	**20**
F14 Tom Cat	27
F/16 Combat Pilot*	**24**
Face Off!	**20**
Gauntlet 2	20
Heat Wave: Offshore Racing*	**20**
Hole In One - Miniature Golf	20
Iron Lord	**27**
Jack Nicklaus Course Champ '89	**10**
Jeopardy 2	12
John Madden Football	**27**
Knights of Legend	**33**
Laser Squad*	**23**
Licence to Kill	**13**
Mean Streets	**26**
Monday Night Football	**26**
Panzer Battles	**27**
Pipe Dream	**21**
Pocket Rockets	**20**
Pro Tennis Tour*	**21**
Puffy's Saga*	**21**
Rambo III	**20**
Robocop	23
Scrabble	21
Sentinel Worlds	**24**
Sex Vixens From Space	20
Sim City	20
Skate Wars*	**27**
Starflight	**27**
Super Password	12
Superman	**20**
TV Sports Football	**21**
Sword of Aragon*	**27**
Test Drive 2: European Challenge	**10**
Test Drive 2: Muscle Cars	**10**
Test Drive 2: The Duel	19
The Cycles: Grand Prix Racing	**20**
Three Stooges	23
Thud Ridge	**24**
Turbo Out Run*	**24**
Ultima Trilogy (1,2,3)	39
Ultima V	39
Vigilante	**17**
Wheel of Fortune 2	12
Windwalker	**27**
Wizardry - Heart of Maelstrom	**27**
Wizardry Trilogy	**26**

GEOS RELATED

Desk Pak Plus - Geos	$22
FontPak Plus -GEOS	22
GEOS 64 v 2.0	39
Geochart/64	22
Geofile 128	45
Geopublish 64	39
Geos 128 V2.0	45

CREATIVITY/GRAPHICS

Award Maker Plus	$29
Billboard Maker	25
Blazzing Paddles	25
Business Card Maker	29
Cad 3D	39
Cadpak 128	39
Colorez 128	12
Computer Eyes	105
Doodle	29
Home Designer	45
Home Designer Circuit Symbol Lib	10
Icon Factory	25
Label Wizard	21
Newsmaker 128	24
Newsroom	14
Photo Finish	19
Poster Maker 128	24
Printmaster Plus	25
Printshop	30
Screen F/X	25
Sketchpad 128	24
Spectrum 128	29

PERSONAL

Bible Search KJV	$20
Bible Search NIV	**25**
Bridge 5.0	20
Dream Machine Analyze/64	19
Family Tree C64/C128 and LDS	39
Great War	15
Heartlab	49
Recipe Filer	11
Tarot 128	15

UTILITIES/LANGUAGES

1541/1571 Drive Alignment	$25
1581 Toolkit V2/ Dos Ref	29
Basic 8	29
Basic 8 Toolkit	17
Basic 8-How to Get the Most Out of	17
Basic Compiler/128	39
Basic Compiler/64	29
Big Blue Reader V3 (64/128)	32
Bobsterm Pro 128	42

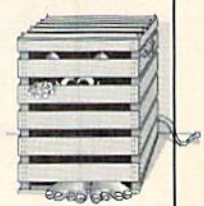
WE NOW CARRY JiffyDOS!

JiffyDOS v6.0 64	**$50**
JiffyDOS v6.0 128	**$60**

Please specify computer and drive when ordering

C128 Advanced User Package	**45**
C128 Programmer's Delight	**45**
CP/M Kit	22
CSM Newsletter Compemdium	**29**
Cobol 128	29
Digitalker 128	20
Gnome Kit 64/128	29
Kracker Jax Super Cat	22
Kracker Jax Vol 1-7 + Shotgun2	27
Maverick V4.0 Copier	**29**
Merlin 128	45
Protolinc BBS 128	29
Prototerm 128	12
Super 81 Utilities 128 or 64 each	29
Super Aide 64	25
Super C 128	45
Super Disk Librarian 128or64 ea	19
Super Disk Utilities 128	25
Super Pascal 128 or 64 each	45
Super Snapshot V5.0	**59**
Super Snapshot V5.0 w/128 disble	**65**
SysRES Enhanced	16

WHY CHOOSE BRIWALL?



- ✓No Surcharge on Charge Orders
- ✓24-Hour Toll-Free Ordering
- ✓Our Fifth Year in Business
- ✓Fast, Friendly, Reliable Service
- ✓In-house Technical Support
- ✓A Fair Return/Exchange Policy
- ✓A "No-surprises" Shipping Policy

SATISFACTION GUARANTEED!

We maintain an enormous inventory of software. If you don't see what you want, CALL!

Titles marked with * were not yet available when the ad was prepared. Please call for firm price and availablilty. Titles in BOLD are new items

1541/1571 DRIVE ALIGNMENT

This excellent alignment program is a must-have for every Commodore owner. Easy to use, it helps you to align your drive so that it runs just as if it were new! The simple instructional manual and on-screen help prompt you through the alignment procedure and help you adjust the speed and head stop of your drives. It even includes instructions on how to load the alignment program when nothing else will load!

Don;t be caught short! We get more Red Label orders for this program than any other program we sell. Save yourself the expense! Order now, keep it in your library, and use it often!

Works on the 64, 128 and SX64 for the 1541, 1571, 1541-II and compatible third party drives.

STILL ONLY $25

LOOKING FOR PROGRAMS MADE JUST FOR YOUR 128?

NEWS MAKER 128
Desktop publishing for the 128D (or the 128 with 64K video RAM upgrade). **ONLY $24**

SKETCHPAD 128
Complete drawing system for the Commodore 128 and 1351 mouse. **JUST $24**

SPECTRUM 128
80-column paint package for the 128D (or 128 with 64K video RAM upgrade.) **ONLY $29**

HOME DESIGNER 128
Professional object-oriented CAD package for the Commodore 128. **OUR PRICE ONLY $45**

BASIC 8 Package
Here's a special deal on a complete Basic 8 library. You get Basic 8, Basic 8 Toolkit and How To Get The Most Out Of Basic 8. **OUR PACKAGE PRICE $45!**

SHIPPING POLICY: ALL ORDERS received before 3PM EST will normally be shipped within 2 business days. All UPS shipments are sent Signature Required/No Driver Release. Add the following shipping charges to your Total software order.
UPS: Ground $4.50 (cont. USA ONLY); Air/Rush $8.00 (includes Puerto Rico/Hawaii); Overnight $12.00 + $2.50 PER ITEM (must be received by 12 Noon.)
Priority Mail: USA $4.50 (Includes APO/FPO); Canada/Mexico $7.00; Other Foreign $4.00 Handling + Actual Shipping + Insurance.
HARDWARE: Shipping charges for all hardware are $4.50 handling + actual shipping charges + insurance.

ORDERING INSTRUCTIONS: For your convenience, you can place a phone order 24 Hours/7 days a week on our TOLL-FREE LINE 1-800-638-5757. Outside the USA, please use (215) 683-5433. Price, availability, and compatibility checks are also welcome on our order line, Monday thru Friday, 9:30AM - 4:30PM EST. AFTER HOURS Orders Only Please! When placing an order, please specify your computer model, home & daytime telephone number, shipping address, charge card number, expiration date and name of bank.

ACCEPTED PAYMENT METHODS: We gladly accept Personal Checks (no holding), Money Orders, VISA, MASTERCARD, School Purchase Orders, or COD ($4.00 additional -- for established Briwall Customers ONLY). All checks must be in US Dollars and drawn on a US bank. There is no surcharge for credit cards and your card is not charged until we ship!
RETURN POLICY (for software and accessories ONLY): We have a liberal return policy to better service your needs. If within 15 days from the time you receive an item, you are not satisfied with it for any reason, you may return it to us for either a refund, exchange, or open credit. *refunds are subject to a 10% restocking fee per item returned* ($5.00 minimum per item.) Exchanges/Open credits will gladly be issued for the full purchase price of the item. DEFECTIVE items, Hardware items and Special Order items will be repaired or replaced with the same item only.
TECHNICAL SUPPORT (215) 683-5699, Mon - Fri, 9am - 5pm EST. We do our very best to help you with your product selections before you order, and after you receive your product. General questions, such as price, compatibility, etc., will be handled by our order staff at the time you place your order. BUT, if you have specific, detailed questions about a product you will get the most help from our Technical Support Line.

SOLID PRODUCTS . . . SOLID SUPPORT

Alien Strike

Defend yourself against wave after wave of alien creatures in this fast-paced shoot-'em-up.

By BEHZAD JAMSHIDI

Watch out! What was that? Find out when you play this one-person action game, designed for the C-64 with a joystick plugged into port 2.

Here's the scenario that unfolds when you press F1 to play. An alien space ship wanders back and forth across the top of the screen, launching squadrons of fighters that try to destroy your only line of defense, a cannon at the bottom of the screen. The fighters come in numerous shapes and sizes, and they travel at various speeds on unpredictable paths. Are you fast enough to shoot them down, along with the mother ship, without getting zapped yourself?

We'll see. Using the joystick, move the cannon back and forth to avoid the attackers and to aim; then press the firebutton to shoot. Hold the firebutton down for rapid fire.

If you destroy the mother ship, a new one unfortunately appears and sends out an additional squadron of fighters. There's a third mother ship, too, and four squadrons altogether.

You get 20 points for each fighter you destroy. Mother ships are worth 120.

The Unexpected consists of three programs. Listing 1 is the boot program, Listing 2 is the game itself and Listing 3 is the sprite data. Type them all in, using *RUN*'s Checksum program to detect typing errors, and save them to disk. Load and run Listings 2 and 3 to create the ML files on disk. To play, load the boot program and press F1. R

Behzad Jamshidi is a graphics design student with a natural interest in computer graphics.

Running Instructions: **Type in all three listings, save them to disk, and then load and run Listings 2 and 3 to create the machine language files. To play, load Listing 1, the boot program, and press F1.**

Listing 1. Boot program. (Available on ReRun disk. See order card facing page 24.)

```
5 ONAGOSUB2Ø,3Ø          :REM*1Ø8
1Ø A=1:LOAD"SPRITES",8,1
                         :REM*153
2Ø A=2:LOAD"THE UNEXPECTED",8,1
                         :REM*89
3Ø A=3:SYS49152          :REM*116
```

Listing 2. The Unexpected creator program. (Available on ReRun disk. See order card facing page 24.)

```
Ø REM THIS LIST 2 CREATES (AND
  SHOULD NOT BE CALLED) THE UNE
  XPECTED                :REM*72
5 OPEN 8,8,8,"THE UNEXPECTED,P,
  W"                     :REM*195
6 CT=Ø:PRINT"{SHFT CLR}":REM*56
1Ø READ A$:IF A$="-1" THEN CLOS
  E8:PRINT:PRINT"ALL DONE!":EN
  D                      :REM*129
12 PRINT"{HOME}READING LINE "+S
  TR$(CT):CT=CT+1        :REM*141
15 IF LEN(A$)<62 THEN 55
                         :REM*254
2Ø B$=MID$(A$,1,2Ø)+MID$(A$,22,
  2Ø)+MID$(A$,43,2Ø)     :REM*242
25 FOR I=1 TO 3Ø         :REM*181
3Ø C$=MID$(B$,(I*2)-1,2):H$=LEF
  T$(C$,1):L$=RIGHT$(C$,1)
                         :REM*2Ø9
35 H=VAL(H$):IF H$>"9" THEN H=A
  SC(H$)-55              :REM*85
4Ø L=VAL(L$):IF L$>"9" THEN L=A
  SC(L$)-55              :REM*136
45 BY=H*16+L:PRINT#8,CHR$(BY);
                         :REM*67
5Ø NEXT:GOTO 1Ø          :REM*115
55 IF LEN(A$)<21 THEN B$=A$:GOT
  O 7Ø                   :REM*184
6Ø IF LEN(A$)<42 THEN B$=LEFT$(
  A$,2Ø)+RIGHT$(A$,(LEN(A$)-21
  )):GOTO 7Ø             :REM*176
65 B$=LEFT$(A$,2Ø)+MID$(A$,22,2
  Ø)+RIGHT$(A$,LEN(A$)-42)
                         :REM*14Ø
7Ø FOR I=1 TO LEN(B$)/2:REM*221
75 C$=MID$(B$,(I*2)-1,2):H$=LEF
  T$(C$,1):L$=RIGHT$(C$,1)
                         :REM*14Ø
8Ø H=VAL(H$):IF H$>"9" THEN H=A
  SC(H$)-55              :REM*56
85 L=VAL(L$):IF L$>"9" THEN L=A
  SC(L$)-55              :REM*84
```

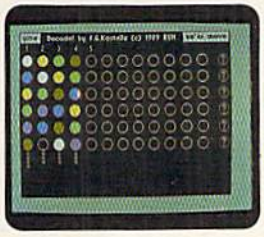
RUN it right: **C-64; joystick**

ILLUSTRATED BY KEVIN HAWKES

Say Hello To The Newest Member Of The Family!

THE GEOS COMPANION

Introducing the ultimate collection of GEOS creativity tools...and a whole lot more! With The GEOS COMPANION, you'll be a master of music, animation, games, clip art, utilities and more! As with all GEOS software products, the eye-catching icon-based interface is a breeze to learn and easy to use!



A Dynamite Personality!

The GEOS COMPANION is the best GEOS accessory ever published. And it's no wonder, when you discover all the top-notch creativity and productivity tools The GEOS COMPANION has to offer!

■ **GeoAnimator.** Create your own animations with this innovative graphics program, the only one of its kind! Try it! It's fun!

■ **GeoBach.** Compose your own hit songs or generate fantastic sound effects with this master musicmaker.

■ **GeoMusicPlayer.** This easy-to-use music player program lets you play the music files you've created with Geo Bach.

■ **Geos Utilities.** Get the most from GEOS with such powerful utility programs as Pattern Editor 2.0, File Merge, 1581 BootMaker, Autoloader and Batch File Copier.

■ **GEOS Games.** Includes the classic Breakout game in 3-D format, plus a challenging Master-Mind-like game that'll entertain the entire family.

■ **Clip Art.** Noted GEOS designer Susan Lamb has compiled her best collection of dozens of holiday and special occasion images for you to use in your cards, newsletters, memos, etc. Just cut, paste, and publish!

■ **PLUS!** A new assortment of distinctive fonts!

■ **Documentation book included!**

Distinguished Ancestry!

The GEOS COMPANION is the third in a series of fine GEOS accessories published by RUN Magazine, giving you total confidence in the quality and usefulness of The GEOS COMPANION. Plus, it is completely compatible with all GEOS software products. And perhaps best of all, The GEOS COMPANION is designed to work on both the C64 and C128.

Attractive Price!

The GEOS COMPANION comes with a modest price tag...just $24.97. And remember, as with all of RUN's software, your purchase is fully guaranteed for 30 days if you're not satisfied!

ORDER TODAY!

Ordering The GEOS COMPANION is almost as easy as using it! To get your copy, use this handy coupon or call 1-800-343-0728 and place your credit card order.

☐ **YES!** Send me The GEOS COMPANION for just $24.97!

☐ Check enclosed (make checks payable to RUN Magazine.)

Charge my: ☐ MasterCard ☐ AMEX ☐ VISA

Card #_____ Exp._____

Signature_____

Name_____

Address_____

City_____ State_____ Zip_____

Canadian and Foreign orders: Please add $3.95 per disk. Checks must be payable in US funds drawn on a US bank.

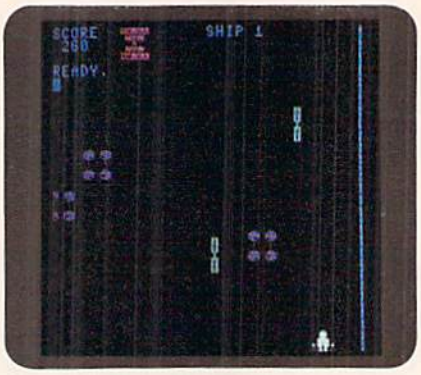
GEOS is needed to operate The GEOS COMPANION. GEOS POWER PAKS are products of RUN Magazine, and are not connected with Berkeley Softworks, creator of GEOS, or Commodore Business Machines, manufacturer of the C-64 and C-128. Allow 4-6 weeks for delivery.

G3490

GEOS COMPANION • RUN Magazine • 80 Elm Street • Peterborough, NH 03458

ALIEN STRIKE

```
9Ø BY=H*16+L:PRINT#8,CHR$(BY);
                        :REM*148
95 NEXT:GOTO 1Ø         :REM*16Ø
1ØØ REM UNEXPECTED ML   :REM*35
1Ø1 DATA ØØCØA9932ØD2FFA9ØØ8D*F
    3ØBA9D28DBDØBA98Ø8D*F8Ø7A98
    18DF9Ø7A9758D       :REM*1Ø4
1Ø2 DATA EØØ78DB8Ø78D9ØØ78D68*Ø
    78D4ØØ78D18Ø78DFØØ6*8DC8Ø68
    DAØØ68D78Ø68D       :REM*99
1Ø3 DATA 5ØØ68D28Ø68DØØØ68DD8*Ø
    58DBØØ58D88Ø58D6ØØ5*8D38Ø58
    D1ØØ58DE8Ø48D       :REM*69
1Ø4 DATA CØØ48D98Ø48D7ØØ48D48*Ø
    48D2ØØ4A9ØØ8DEEØB8D*BFØB8D2
    ØDØ8DECØB8D21       :REM*23
1Ø5 DATA DØ8DF2ØB8DE3ØBA9FF8D*B
    9ØB8D1CDØ8DØEDØA986*8DFFØ7A
    9ØA8D2EDØA9ØB       :REM*171
1Ø6 DATA 8D26DØA9ØF8D18D4A95Ø*8
    DØ5D4A9ØF8D18D4A91Ø*8DØ5D4A
    9FØ8DØ6D4A9F3       :REM*181
1Ø7 DATA 8DØ6D4A9Ø78DØ3D4A9Ø1*8
    DBBØB8D27DØA9Ø28D28*DØA9828
    DØØDØ8DB8ØB8D       :REM*173
1Ø8 DATA EØØB8DE1ØB8DE2ØB8DE3*Ø
    B8DE4ØB8DFAØ78DFBØ7*8DFCØ78
    DFDØ78DFEØ7A9       :REM*131
1Ø9 DATA 338DE6ØB8DØFDØA9Ø48D*B
    AØBA93Ø8D15Ø4A9FF8D*Ø1DØA96
    48DBEØBA9ØØ8D       :REM*158
11Ø DATA CØØB8DC2ØB8DC4ØB8DC6*Ø
    B8DC8ØB8DØ4DØ8DØ6DØ*8DCFØB8
    DDØØB8DD1ØB8D       :REM*1Ø4
111 DATA D2ØB8DD3ØB8DØ8DØ8DØA*D
    Ø8DØCDØA94C8DC1ØB8D*Ø5DØA96
    58DC3ØB8DØ7DØ       :REM*23
112 DATA A97E8DC5ØB8DØ9DØA997*8
    DC7ØB8DØBDØA9BØ8DC9*ØB8DØDD
    ØA9FF8DCAØB8D       :REM*197
113 DATA CBØB8DCCØB8DCDØB8DCE*Ø
    BA9Ø28DE8ØB8DE9ØB8D*29DØ8D2
    ADØ8D2BDØ8D2C       :REM*91
114 DATA DØ8D2DDØA9138D1ØØ4A9*Ø
    88D11Ø4A9Ø98D12Ø4A9*1Ø8D13Ø
    4A92Ø8D14Ø4A9       :REM*194
115 DATA 138DØØØ4A9Ø38DØ1Ø48D*F
    1ØBA9ØF8DØ2Ø4A9128D*Ø3Ø4A9F
    D8D15DØA9Ø58D       :REM*35
116 DATA Ø4Ø42ØC8C14C27C2A91Ø*8
    DC3Ø5A9128DC4Ø5A9Ø5*8DC5Ø5A
    9138DC6Ø58DC7       :REM*116
117 DATA Ø5A9Ø68DC9Ø5A9318DCA*Ø
    5A92Ø8DC8Ø5AØFD8C15*DØA6C5E
    ØØ4DØF58DC3Ø5       :REM*192
118 DATA 8DC4Ø58DC5Ø58DC6Ø58D*C
    7Ø58DC8Ø58DC9Ø58DCA*Ø5A9338
    D15Ø42ØC2C86Ø       :REM*48
119 DATA AEF2ØBEØØ1DØØ62ØC8C1*4
    CØØCØAEØØDCEØ77DØ11*AEB8ØBE
    ØFFFØ16E88EB8       :REM*57
12Ø DATA ØB8EØØDØ4C4BC2EØ67DØ*Ø
    8A9Ø18DBBØB4C2EC2AE*ØØDCE07
    BDØ11AEB8ØBEØ       :REM*147
121 DATA 19FØ16CA8EB8ØB8EØØDØ*4
    C6FC2EØ6BDØØ8A9Ø18D*BBØB4C5
    2C2AEB9ØBCA8E       :REM*236
122 DATA B9ØBEØØØDØF5AEBAØBCA*8
    EBAØBEØØØDØØ34C9ØC2*A6FF8EB
    7ADE8ØB8D2BDØ       :REM*74
14Ø DATA AED7ØBEØØ1DØ3ØAEC7ØB*E
    88EC7ØB8EØBDØEØFADØ*22A9ØØ8
    DC6ØB8DØADØ8D       :REM*246
141 DATA D2ØB8DD7ØBA9978DC7ØB*8
    DØBDØADEØØB8DFDØ7AD*E8ØB8D2
    CDØAED8ØBEØØ1       :REM*61
142 DATA DØ3ØAEC9ØBE88EC9ØB8E*Ø
    DDØEØFADØ22A9ØØ8DC8*ØB8DØCD
    Ø8DD3ØB8DD8ØB       :REM*169
143 DATA A9BØ8DC9ØB8DØDDØADEØ*Ø
    B8DFEØ7ADE8ØB8D2DDØ*2ØØ4C54
    C37C6AE1ED08E       :REM*12
144 DATA D9ØBA9Ø22DD9ØBC9Ø2DØ*Ø
    62Ø19C62Ø16C8A98Ø2D*D9ØBC98
    ØDØ112ØD4C6A9       :REM*53
145 DATA Ø18DE5ØB8DE7ØB8DFØØB*2
    Ø6FC8A2Ø6ECD9ØBDØ21*A9ØØ8DE
    AØB8DCØØB8DØ4       :REM*4
146 DATA DØA94C8DC1ØB8DØ5DØA9*Ø
    18DE7ØB8DD4ØB8DCFØB*8DEBØBA
    2ØAECD9ØBDØ21       :REM*15Ø
147 DATA A9ØØ8DEAØB8DC2ØB8DØ6*D
    ØA9658DC3ØB8DØ7DØA9*Ø18DE7Ø
    B8DD5ØB8DDØØB       :REM*177
148 DATA 8DEBØBA212ECD9ØBDØ21*A
    9ØØ8DEAØB8DC4ØB8DØ8*DØA97E8
    DC5ØB8DØ9DØA9       :REM*136
149 DATA Ø18DE7ØB8DD6ØB8DD1ØB*8
    DEBØBA222ECD9ØBDØ21*A9ØØ8DE
    AØB8DC6ØB8DØA       :REM*76
15Ø DATA DØA9978DC7ØB8DØBDØA9*Ø
    18DE7ØB8DD7ØB8DD2ØB*8DEBØBA
    242ECD9ØBDØ21       :REM*153
151 DATA A9ØØ8DEAØB8DC8ØB8DØC*D
    ØA9BØ8DC9ØB8DØDDØA9*Ø18DE7Ø
    B8DD8ØB8DD3ØB       :REM*1Ø2
152 DATA 8DEBØBA9Ø12DD9ØBC9Ø1*D
    Ø14AEF3ØBEØØ1DØØ5AØ*Ø18CEFØ
    BA9Ø18DF3ØB8D       :REM*32
153 DATA EDØB6ØA9ØØ8DØ1D48DBF*Ø
    B8DBCØB8DBBØBA9E68D*BDØBA9F
    D8D15DØA9648D       :REM*5
154 DATA BEØB6ØAEECØBE88EECØB*E
    ØØ2FØØ34C93C6A2ØØ8E*ECØBAED
    DØBEØØ1DØØ34C       :REM*117
155 DATA 93C6AEDFØBEØØ1FØ1CA4*A
    28CDEØBAEDCØBE88EDC*ØB8EØED
    ØECDEØBFØØ34C       :REM*78
156 DATA 93C6A9Ø18DDFØBA4A28C*D
    EØBAEDCØBCA8EDCØB8E*ØEDØECD
    EØBFØØ34C93C6       :REM*129
157 DATA A9ØØ8DDFØBAEE5ØBEØØ1*F
    ØØ34CECC6AEE6ØBCA8E*2ED08EØ
    FDØ8EE6ØBEØØA       :REM*126
158 DATA FØØ34CECC6A9ØA8D2EDØ*A
    9ØØ8DE5ØB8DDDØB8DDF*ØBA9ØØ8
    DØED08DDCØBA9       :REM*134
159 DATA 338DE6ØB8DØFDØ4CECC6*A
    EE9ØBE88EE9ØB8EE8ØB*EØØ8FØØ
    16ØA9Ø18DE9ØB       :REM*14
16Ø DATA 8DE8ØB6ØAEEAØBEØØ1DØ*1
    8AEEBØBE88EEBØBEØ1E*DØØAA9Ø
    Ø8DEAØBA9808D       :REM*186
161 DATA 12D44C38C7AEE7ØBEØØ1*F
    ØØ34C38C7A9AØ8D13D4*A9FC8D1
    4D4A95Ø8DØFD4       :REM*23
162 DATA A9288DØED4A9818D12D4*A
    9Ø18DEAØBA9ØØ8DE7ØB*AEEFØBE
```



Get ready to stem the tide of alien attackers.

```
    ØØ1FØØ34C45C7       :REM*211
163 DATA 2Ø6AC7AEFØØBEØØ1FØØ3*4
    C1AC2A9ØØ8DFØØBAEEØ*ØBE88EE
    ØØBEØ86FØØ34C       :REM*55
164 DATA 1AC2A9828DEØØB4C1AC2*A
    EEEØBE88EEEØBEØ5ØDØ*ØFA9ØØ8
    D2ØDØ8DEEØB8D       :REM*32
165 DATA EFØB2Ø8AC76ØA6A28E2Ø*D
    Ø6ØAEF1ØBCA8EF1ØB4C*A5C7A9Ø
    48DF1ØBA9ØØ8D       :REM*4
166 DATA EAØB8DBBØB8DBCØB6ØEØ*Ø
    2DØØ5A9328D15Ø4EØØ1*DØØ5A93
    18D15Ø4EØØØDØ       :REM*84
167 DATA 15A93Ø8D15Ø4A9Ø18DF2*Ø
    B2Ø15C3A98Ø8D12D44C*94C7EØØ
    3DØØ5A9338D15       :REM*116
168 DATA Ø46ØFBØ4FBØ4FBØ4FBØ4*F
    BØØFBØØFBØØFBØ4FBØØ*FBØ4FBØ
    4FBØ4FBØ4FBØ4       :REM*9
169 DATA FBØ4FBØØFBØ4FBØ4FBØØ*8
    7Ø4FFØ2Ø4ØØFFØØFFØØ*FFØØFFØ
    ØFF84FFØØFFØØ       :REM*61
17Ø DATA FFØØ4C1CC84C74A4ADA8*Ø
    2AEA9Ø2186914A88A69*ØØAA988
    DA8Ø28EA9Ø2A9       :REM*175
171 DATA D6A2ØØ85228623A9ØØA2*Ø
    ØAØØØ9122A9ØD2ØD2FF*A9D3A2Ø
    Ø85228623A9ØØ       :REM*188
172 DATA A2ØØAØØØ9122A91D2ØD2*F
    FADA8Ø2AEA9Ø28622AA*A5222ØC
    DBDA9ØD2ØD2FF       :REM*241
173 DATA 6ØADA8Ø2AEA9Ø2186964*A
    88A69ØØAA988DA8Ø28E*A9Ø2A9D
    6A2ØØ85228623       :REM*9
174 DATA A9ØØA2ØØAØØØ9122A9ØD*2
    ØD2FFA9D3A2ØØ852286*23A9ØØA
    2ØØAØØØ9122A9       :REM*1
175 DATA 1D2ØD2FFADA8Ø2AEA9Ø2*8
    622AAA5222ØCDBDA9ØD*2ØD2FF6
    ØA9ØØA2ØØ8DA8       :REM*48
176 DATA Ø28EA9Ø26ØØØ   :REM*134
177 DATA -1             :REM*35
```

Listing 3. The Sprite-Data program. (Available on ReRun disk. See order card facing page 24.)

```
Ø REM THIS LIST 3 CREATES (AND
  SHOULD NOT BE CALLED) SPRITES
                        :REM*245
5 OPEN 8,8,8,"SPRITES,P,W"
                        :REM*36
6 CT=Ø:PRINT"{SHFT CLR}":REM*56
1Ø READ A$:IF A$="-1" THEN CLOS
  E8:PRINT:PRINT"ALL DONE!":EN
  D                     :REM*129
12 PRINT"{HOME}READING LINE "+S
  TR$(CT):CT=CT+1       :REM*141
15 IF LEN(A$)<62 THEN 55
                        :REM*254
2Ø B$=MID$(A$,1,2Ø)+MID$(A$,22,
  2Ø)+MID$(A$,43,2Ø)    :REM*242
25 FOR I=1 TO 3Ø        :REM*181
3Ø C$=MID$(B$,(I*2)-1,2):H$=LEF
  T$(C$,1):L$=RIGHT$(C$,1)
                        :REM*2Ø9
35 H=VAL(H$):IF H$>"9" THEN H=A
  SC(H$)-55             :REM*85
4Ø L=VAL(L$):IF L$>"9" THEN L=A
  SC(L$)-55             :REM*136
45 BY=H*16+L:PRINT#8,CHR$(BY);
                        :REM*67
5Ø NEXT:GOTO 1Ø         :REM*115
55 IF LEN(A$)<21 THEN B$=A$:GOT
  O 7Ø                  :REM*184
6Ø IF LEN(A$)<42 THEN B$=LEFT$(
  A$,2Ø)+RIGHT$(A$,(LEN(A$)-21
  )):GOTO 7Ø            :REM*176
65 B$=LEFT$(A$,2Ø)+MID$(A$,22,2
  Ø)+RIGHT$(A$,LEN(A$)-42)
                        :REM*14Ø
7Ø FOR I=1 TO LEN(B$)/2:REM*221
75 C$=MID$(B$,(I*2)-1,2):H$=LEF
  T$(C$,1):L$=RIGHT$(C$,1)
                        :REM*14Ø
8Ø H=VAL(H$):IF H$>"9" THEN H=A
  SC(H$)-55             :REM*56
85 L=VAL(L$):IF L$>"9" THEN L=A
  SC(L$)-55             :REM*84
9Ø BY=H*16+L:PRINT#8,CHR$(BY);
                        :REM*148
95 NEXT:GOTO 1Ø         :REM*16Ø
1ØØ REM SPRITE DATA     :REM*134
1Ø1 DATA ØØ2ØØØØØØØØØØØØØØØØ*Ø
    ØØØØØØØØØØØØØØØØØØ*ØØØØØØØ
    ØØØØØØ2ØØØØØ       :REM*215
1Ø2 DATA A8ØØØØA8ØØØØA8ØØØØA8*Ø
    ØØ2AAØØØ2AAØØØ2AAØØ*22AA2Ø2
    2BA2Ø3FBBFØFF       :REM*177
1Ø3 DATA BBFCFFBBFCØØØØ2ØØØØØ*2
    ØØØØØ2ØØØØØØØØØØØØ*ØØØØØØØ
    ØØØØØØØØØØØØ       :REM*18Ø
1Ø4 DATA ØØØØØØØØØØØØØØØØØØØ*Ø
    ØØØØØØØØØØØØØØØØØØ*ØØØØØØØ
    ØØØØØØØØØØØØ       :REM*76
1Ø5 DATA ØØØØØØØØØØØØØØØØØØØ*Ø
    ØØØØØØØ3BØØØØA28ØØØ*F3CØØ2A
    2AØØ2A2AØØ3F3       :REM*211
1Ø6 DATA FØØAA2A8ØA8ØA8ØFØØ3C*Ø
    A8ØA8ØAA2A8ØAA2A8Ø3*F3FØØ2A
    2AØØ2A2AØØØF3       :REM*144
1Ø7 DATA CØØØA28ØØØ2AØØØØØØØØ*Ø
    ØØØØØØØØØ2AØØØØ2EØØ*ØØ2EØØØ
    Ø2EØØØØ2EØØØØ       :REM*235
1Ø8 DATA 2EØØØØ2EØØØØ2EØØØØ2A*Ø
    ØØØØ8ØØØØØ8ØØØØØ8ØØ*ØØ2AØØØ
    Ø2EØØØØ2EØØØØ       :REM*1Ø5
1Ø9 DATA 2EØØØØ2EØØØØ2EØØØØ2E*Ø
    ØØØ2EØØØØ2AØØF9ØØØØ*ØØ2AØØA
    8AA82AAAA82AA       :REM*199
11Ø DATA AA82AAA8822A2AØØA8ØC*Ø
    Ø3ØØCØØ3ØØCØØ3ØØCØØ*3ØØCØØ3
    ØØCØØ3Ø2AØØA8       :REM*31
111 DATA AA82AAAA82AAAA822AA8*8
    2AA2AØØA8ØØØØØØØØØ*ØØØØØØØ
    ØØØØØØØØØØØØ       :REM*171
112 DATA ØØØØØØØØØØØØØØØØØØØ*Ø
    ØØØØØØØØØØØØØØØØØØ*AAØØØØ2
    8ØØØØ28ØØØØAA       :REM*44
113 DATA ØØØØØØØØØØØØØØØØØØØ*Ø
    ØØØØØØØØØØØØØØØØØØ*ØØØØØØØ
    ØØØF9AAAAAABB       :REM*117
114 DATA EBEEBBEBEEAAAAAAØØØØ*Ø
    ØØAAAAØØAFFAØØAAAAØ*ØØØØØØØ
    Ø28ØØØ28ØØØØ       :REM*2Ø1
115 DATA ØØØØØAAAAØØAFFAØØAAA*A
    ØØØØØØØAAAAAABBEBEEE*BBEBEEA
    AAAAAØØØØØAA        :REM*179
116 DATA -1             :REM*229 ■
```


Computer Eye Strain

Do you suffer from: red or burning eyes, blurred vision, or headaches?

Thanks to Terminal Optics Eyewear, Computer Eye Strain can now rest in peace! Terminal Optics Eyewear has three unique features: each lense is UV coated to block UV rays, custom tinted to reduce eye strain and magnified for the distance from your eyes to the screen to reduce eye strain caused by static focusing.

The best news is that non-prescription eyewear costs only $49.95. Prescription spectacles cost $69.95 for single vision and $89.95 for bifocals.

Call or write for a free brochure and order form today!

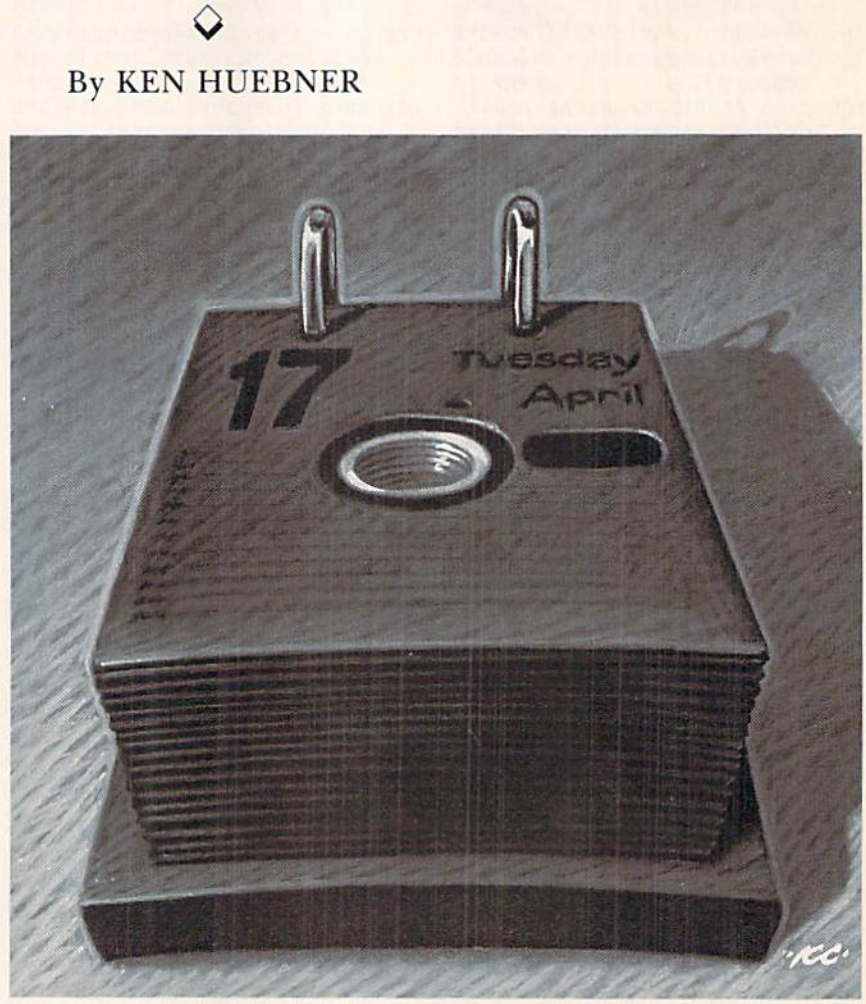
Terminal Optics
1-800-648-2109
2314 DuBois Drive
Warsaw, IN 46580

Circle 190 on Reader Service card.

RUN is a publication of IDG Communications/Peterborough, a division of IDG Communications, the world's largest publisher of computer-related information. IDG Communications publishes over 90 computer publications in 33 countries. Fourteen million people read one or more of IDG Communications' publications each month. IDG Communications publications contribute to the *IDG News Service*, offering the latest domestic and international computer news. IDG Communications publications include: ARGENTINA's *Computerworld Argentina*; ASIA's *Communications World, Computerworld Hong Kong, Computerworld Malaysia, Computerworld Singapore, Computerworld Southeast Asia, PC Review*; AUSTRALIA's *Computerworld Australia, Communications World, Australian PC World, Australian Macworld*; AUSTRIA's *Computerwelt Oesterreich*; BRAZIL's *Data News, PC Mundo, Micro Mundo*; CANADA's *Computer Data*; CHILE's *Informatica, Computacion Personal*; DENMARK'S *Computerworld Danmark, PC World Danmark*; FINLAND's *Tietoviikko, Mikro*; FRANCE's *Le Monde Informatique, Distributique, InfoPC, Telecoms International*; GREECE's *Micro and Computer Age*; HUNGARY's *Computerworld SZT, PC Mikrovilag*; INDIA's *Dataquest*; ISRAEL's *People & Computers Weekly, People & Computers BiWeekly*; ITALY's *Computerworld Italia*; JAPAN's *Computerworld Japan*; MEXICO's *Computerworld Mexico*; THE NETHERLANDS' *Computerworld Netherlands, PC World Benelux*; NEW ZEALAND's *Computerworld New Zealand*; NORWAY's *Computerworld Norge, PC World Norge*; PEOPLE'S REPUBLIC OF CHINA's *China Computerworld, China Computerworld Monthly*; SAUDI ARABIA's *Arabian Computer News*; SOUTH KOREA's *Computerworld Korea, PC World Korea*; SPAIN's *CIMWORLD, Computerworld Espana, Commodore World, PC World Espana, Communicaciones World, Informatica Industrial*; SWEDEN's *Computer Sweden, MikroDatorn, Svenska PC World*; SWITZERLAND's *Computerworld Schweiz*; UNITED KINGDOM's *Computer News, DEC Today, ICL Today, PC Business World, LOTUS*; UNITED STATES' *AmigaWorld, CD-ROM Review, CIO, Computer Currents, Computerworld, Computers in Science, Digital News, Federal Computer Week, 80 Micro, FOCUS Publications, inCider, InfoWorld, Macintosh Today, MacWorld, Computer & Software News (Micro Marketworld/Lebhar-Friedman), Network World, PC World, Portable Computer Review, Publish!, PC Resource, RUN, Windows*; VENEZUELA's *Computerworld Venezuela*; WEST GERMANY's *Computerwoche, PC Welt, Run, Information Management, PC Woche*.

Basic Dater

Now you can quickly identify the latest versions of your Basic program listings.



By KEN HUEBNER

If you're a C-64 or 128 programmer who has trouble keeping track of your Basic file listings, here's a handy utility that automatically signs the filename, date and time to every program you save. With Basic Dater, you'll no longer have to suffer the aggravation of getting your latest updated files confused with old backup versions.

Preparation

Type in Listing 1 or 2, whichever is appropriate for your computer. The C-64 and C-128 versions work exactly alike, but I had to write separate listings because Basic 2.0's operating internals are very different from those of Basic 7.0. Just be sure to save your copied listing and at least one backup onto disk. For the C-128 version, you must also type in Listing 3, save it to the same disk with the filename "DATER128.BAS" and then run it to create on the disk a machine language file named "DATER128.O".

Setting Date and Time

When you're ready to use Basic Dater, load and run Listing 1 for the C-64 or Listing 2 for the C-128. With the C-64, expect a short delay while the ML code is poked into RAM. Once your computer is ready, a prompt will appear, asking for the date. Answer by typing, in compressed form, the month, day and year, separated by dashes (e.g., 2-31-1989). The program then asks you, "What's the time?" Type in the time in hours and minutes, plus whether it's AM or PM, without any intervening spaces or special characters. For example, if it's 5:35 PM, type 535PM.

Once the utility has accepted your entered time, the message "Dispatcher On" appears. [Dispatcher was the original program name, generated here by the ML code.—Eds.] If you wish to turn Basic Dater off, enter SYS 52224 for the C-64 or SYS 6144 for the C-128. In case you forget the turn-off instructions, press the run-stop/restore key combination simultaneously.

Important Considerations

Always load and run Basic Dater before you begin a programming session. Note that the second program line will now be unavailable for your use, since Basic Dater uses this line to record program information. Just place a REM or colon at line 2 to properly format your program. Whenever you're ready to save your Basic file, simply do it as you normally would.

When you load the file again, you'll see that the second line now contains the filename in parentheses, followed by the date and time that the save occurred. Now, each time you save a file, a little record of the save is made in the Basic listing. There's also no need to worry about sharing a signed program ►

RUN it right: **C-64 or C-128**

ILLUSTRATED BY KEN CONDON

64 Doctor

A professional diagnostic cartridge for your Commodore 64

- Simply insert cartridge & port connectors
- Tests serial, user and control ports
- Allows for a full keyboard test
- Many chips tested including NMI & IRQ
- Sound channels and graphics tested
- BASIC Kernal & ROM tested
- Screen table clearly displays the results
- All defective chips are highlighted
- Location and CBM part numbers displayed
- Buy the parts and repair it yourself
- Or tell your dealer what's wrong & where

$69.95

UTILITIES UNLIMITED, Inc.

P.O. Box 532
North Plains, OR 97133

If you wish to place your order by phone
CALL (503) 647-5611 24 Hrs A Day!

NEW!

SUPER TRACKER

At last an easy way to find out where the protection really is. **Super Tracker** will display the location of your drive head while you are loading a piece of software. This information will be very useful to find where the protection is. Super Tracker has other useful options such as track and half track display, 8 and 9 switch, density display, write protect on/off. This incredible little tool is encased in a handsome box that sits on top of your drive. Works with all C.64/128 and most C/64 compatible drives. Some minor soldering will be required.

Super Tracker $69.95

NEW!

SUPER CARTRIDGE

The **Ultimate Utility Cartridge** packed full of useful utilities. Super fast file copier, nibbler, sector editor, graphic label maker, just to mention a few. 128K of software at your finger tips. Super Cartridge can be shut off and uses no memory.

Super Cartridge $49.95

GRAPHIC PACK.....$24.95

Our best selling graphic programs plus more, all on one disk. **Graphic label maker, Photo-Copy, Super Label, Converter** (converts Print Shop to Print Master), and **Sprite Editor.** Plus we'll add 60 graphics.

PARAMETERS CONSTRUCTION SET

The company that has **The Most Parameters** is about to do something **Unbelievable.** We are giving you more of our secrets. Using this **Very Easy** program, it will not only **Read, Compare** and **Write Parameters for You;** it will also **Customize** the disk with your name. It will impress you, as well as your friends. The **"Parameter Construction Set"** is like nothing you've ever seen. In fact, you can even **Read Parameters** that you may have already written; then by using your construction set, rewrite it with your new **Customized Menu. $24.95.**

New from Europe

XX Rated Game	$24.95	Lock Pik Books 1 & 2	29.95
All New B.B.S.	19.95	D.N. Coder	14.95
Super 1000 Paramters Pak	39.95	Master Lock	9.95
Super 1000 Graphics Pak	29.95		
Blitz Decompiler	19.95		
1541 Mash Drive Alignment	14.95		
Top Secret Stuff 1 & 2	14.95		

ADD $4.00 Shipping & Handling
ADD $3.00 for C.O.D. in USA Only
VISA and MasterCard Accepted

SUPER-CARD +

Have you been watching the war over the "best" backup utility? We would like to state the facts, and put this war to an end . . . once and for all!

- Utilities Unlimited was the FIRST to create a fully functional whole track copier. Our prototype was designed December 6, 1984. Since that time, the product has evolved into the most successful archiver ever created!
- Ultilities Unlimited was FIRST in creating this product for ALL disk drives: 1541/1541C/1541-II/1571/SX-64/ALL Commodore compatibles. While it is true that some of the units required soldering, it is very simple. We offer an installation service for those customers that do not wish to install the card themselves.
- Why would you WANT to wait for parameters? During that waiting period, your precious software could be destroyed! With **SUPER-CARD+** you need not wait! The software is user selectable. So if special changes are required, you can do it yourself! NO WAITING FOR MONTHS. What about those special changes? They (if actually required) are available by calling our office, or through QUANTAM LINK. We can tell you how to backup your software THE SAME DAY YOU GET IT! All versions of our **SUPER-CARD+** software include the latest settings. Even our competitor agrees that we can copy EVERYTHING with the proper settings . . . and we have them!
- Updates — Approximately every 6 weeks we release an update of our software that includes new utilities, copiers, and settings. ALL updates are $5.00... which we feel is a very reasonable fee. Updates are NOT required.
- Across the nation, software rental stores use **SUPER-CARD+** to backup their originals. Our **SUPER-CARD+** has been tested in Europe and has been chosen as the BEST backup utility!
- **SUPER-CARD+** comes complete with the hardware card, documentation, and the latest software release (version 3.0).

So, the facts are on the table . . . you decide for yourself. By the way, they say that *"imitation is the highest form of flattery"* . . . thanks guys!

ONE BOARD FITS ALL DRIVES

Single.....$59.95 Dual.....$109.95

FINAL CARTRIDGE III

No other cartridge adds 64K of ROM. The additional 32K of RIM is dedicated to a unique desk top accessory, setting it apart from the other cartridges.

Final Cartridge III is inspired by the Amiga and Macintosh. The function keys are laid out logically and are easy to remember. The tool kit is the largest collection on any cartridge (almost 30 commands). Just to mention some of the features — Fastload (15X) Backup, Freezer, Printer FR, Word Problems, Pop-Up Calculator, Color Screen Dump and Windows. **All for only $69.95**

Allow 3-4 Weeks for Delivery
All Sales Are **FINAL**
Unless Authorized by Management

VIDEO BYTE II - the only FULL COLOR! video digitizer for the C-64, C-128

Introducing the world's first **FULL COLOR!** video digitizer for the Commodore C-64, 64-C, C-128 & 128-D computer. **VIDEO BYTE** can give you digitized video from your VCR, B/W or COLOR CAMERA or OFF THE AIR or CABLE VIDEO (thanks to a fast! 2.2 sec. scan time). New version 3.0 software features full RE-DISPLAY with MULTI CAPTURE MODE, MENU SELECT PRINTING, EXPANDED COLORIZING FEATURES, SAVE to DISK FEATURE AND MUCH MORE!

FULL COLORIZING! is possible, due to a unique SELECT and INSERT color process, where you can select one of 15 COLORS and insert that color into one of 4 GRAY SCALES. This process will give you over 32,000 different color combinations to use in your video pictures. **SAVES as KOALAS!** Video Byte II allows you to save all your pictures to disk as FULL COLOR KOALA'S. After which (using Koala or suitable program) you can go in and redraw or recolor your V.B. pic's. **LOAD and RE-DISPLAY!** Video Byte II allows you to load and re-display all Video Byte pictures from inside Video Byte's menu. **MENU DRIVEN!** Video Byte II comes with an easy to use menu driven UTILITY DISK and digitizer program (64 MODE ONLY). **COMPACT!** Video Byte II's hardware is compact! In fact no bigger than your average cartridge! Video Byte comes with it's own cable. **INTEGRATED!** Video Byte II is designed to be used with or without EXPLODE! V5.0 color cartridge. Explode! V5.0's menu will return you to VIDEO BYTE II's menu. Explode! V5.0 is the **PERFECT COMPANION!** Video Byte II users are automatically sent **FREE SOFTWARE** updates along with new documentation, when it becomes available. **PRINT!** Video Byte II will printout pictures in BLACK and WHITE GREY SCALE to most printers. However, when used with Explode! V5.0, your printouts can be done IN FULL COLOR 8x11's on the **RAINBOW NX-1000, RAINBOW NX-1000C, JX-80, Seikosha3000 AI. (OKIDATA 10/20's (print larger 6"by9") USER SLIDE SHOW program w/auto or manual display is standard with VIDEO BYTE program. And can be backed up!)**

ONLY $79.95

Why DRAW a car, airplane, person or for that matter. . . anything when you can **BYTE it . . .Video Byte it instead.**

NEW! SUPER CARTRIDGE By The Soft Group EXPLODE! V.5

The **MOST POWERFUL, DISK DRIVE and PRINTER CARTRIDGE** ever produced for the COMMODORE USER, Super **USER FRIENDLY** with all the features most asked for. New FEATURES. . . (a) Faster non-blanking FASTLOAD. (b) MIRROR imaging of all HI-RES screens. (c) 4 Way color selection with insert, for all HI-RES screens. (d) Infinite FILE COPY for all SEQ. & PRG. files, copy your file only once, then write that file to as many disks as you like. . . great for single file copying by small user groups. (e) **FULL COLOR PRINTING of ALL COLOR HI-RES & MULTI-COLOR SCREENS to ALL COLOR DOT MATRIX PRINTERS** (not for INK JET printers). (f) Direct ONE KEY access back to VIDEO BYTE software thru EXPLODE! V5.0's MENU. (g) Supports all popular printer interfaces. (h) FREE upgraded utility disk.

ONLY $44.95

THE 128 SUPERCHIP - A, B or C (another first)

A — There is an empty socket inside your 128 just waiting for our **Super Chip** to give you 32K worth of great Built-in Utilities, all at just the Touch of a Finger. You get built-in features: **Files Copier, Nibbler, Track & Sector Editor, Screen Dump,** and even a 300/1200 baud **Terminal Program** that's 1650, 1670 and Hayes compatible. Best of all, it doesn't use up any memory. To use, simply touch a function key, and it responds to your command.

B — HAS SUPER 81 UTILITIES, a complete utility package for the 1581. Copy whole disks from 1541 or 1571 format to 1581. Many options include 1581 disk editor, drive monitor, Ram writer and will also perform may CP/M & MS-DOS utility functions.

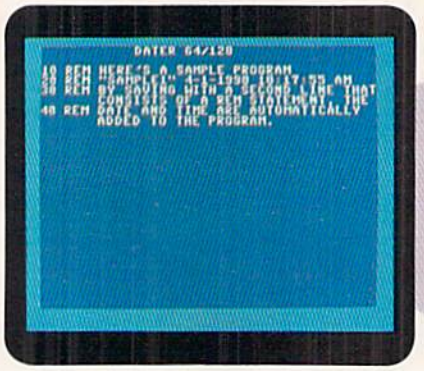
C — "C" IS FOR COMBO and that's what you get. A super combination of both chips A and B in one chip, switchable at a great savings to you. **All Chips Include 100 Parameters FREE!** Chips A or B: **$29.95 each** Chip C: **$44.95 each.**

Circle 187 on Reader Service card.

with a friend, since a program signed by Basic Dater is fully compatible with Commodore's Basic, whether or not the Dater program is in memory.

Finally, if you're doing some program debugging, don't be hesitant about pressing the run-stop/restore keys as an escape, for this will not disable either version of Basic Dater. R

Ken Huebner, a software designer who runs his own business, Softrek, has had several articles published in RUN, *most recently "Deep C-64 World," in last November's issue.*


DATER 64/128
10 REM HERE'S A SAMPLE PROGRAM.
20 REM "SAMPLE": 1-1-1990 10:17:22 AM
30 REM BY BOOTING WITH A SECOND LINE THAT
CONTAINS ONLY A REM STATEMENT, THE
DATE AND TIME ARE AUTOMATICALLY
ADDED TO THE PROGRAM.

Basic Dater's labeling of your listings with date and time will save you time any old day.

Listing 1. Basic Dater C-64 program. (Available on ReRun disk. See order card facing page 24.)

```
10 REM DATER 64 BY KEN HUEBNER
                              :REM*86
20 UI=52224                   :REM*0
30 UT=UI+3+2:REM MIN,HOUR,AM
                              :REM*103
40 UD=UT+3:UM=UD+1:UY=UD+2:REM
   DAY,MONTH,YEAR             :REM*40
50 PRINT"PLEASE WAIT..."
                              :REM*247
60 Y=UI:READ A$               :REM*68
70 B$=MID$(A$,1,20)+MID$(A$,22,
   20)+MID$(A$,43,20)         :REM*196
80 FOR X=1 TO 59 STEP 2:REM*119
90 C$=MID$(B$,X,2):H$=LEFT$(C$,
   1):L$=RIGHT$(C$,1)         :REM*218
100 H=VAL(H$):IFH$>"9"THEN H=AS
    C(H$)-55                  :REM*20
110 L=VAL(L$):IFL$>"9"THEN L=AS
    C(L$)-55                  :REM*61
120 POKEY,H*16+L              :REM*76
130 Y=Y+1:NEXTX:READA$        :REM*70
140 IFA$<>""THEN 70           :REM*20
150 PRINT"{SHFT CLR}{3 CRSR DNs
    }"                        :REM*28
160 PRINT TAB(10)"DATER 64"
                              :REM*148
170 PRINT                     :REM*66
180 PRINT"ENTER THE DATE"
                              :REM*245
190 INPUT "(FORMAT:4-10-1990)";
    DD$                       :REM*57
200 X=0:Z=0                   :REM*49
210 X=X+1:IFX>LEN(DD$)THEN 240
                              :REM*150
220 A$=MID$(DD$,X,1)          :REM*87
230 IF A$<>"-"THEN D$=D$+A$:GOT
    O210                      :REM*10
240 IFZ=0 THEN M=VAL(D$)
                              :REM*184
250 IFZ=1 THEN D=VAL(D$):REM*96
260 IFZ=2 THEN Y=VAL(D$):REM*21
270 D$="":Z=Z+1:IFZ<3 THEN210
                              :REM*199
280 IF D<1 OR D>31 THEN 180
                              :REM*246
290 IF Y<1989 OR Y>1999 THEN 18
    0                         :REM*73
300 IF M<1 OR M>12 THEN 180
                              :REM*30
310 POKE UD,D-1:POKE UM,M-1:POK
    E UY,Y-1900               :REM*253
320 PRINT:PRINT"ENTER THE TIME"
                              :REM*171
330 INPUT "(FORMAT: 930AM)";T$
                              :REM*108
340 IF LEN(T$)=5 THEN T$="0"+T$
                              :REM*69
350 IF LEN(T$)<>6 THEN 320
                              :REM*147
360 A$=RIGHT$(T$,2)           :REM*172
370 MI$=MID$(T$,3,2)          :REM*185
380 HR$=MID$(T$,1,2)          :REM*166
390 MI=VAL(MI$):H=VAL(HR$):A=0
                              :REM*7
400 IF A$="PM" THEN A=1:REM*252
410 IF MI<0 OR MI>59 THEN 320
                              :REM*164
420 IF H<1 OR H>12 THEN 320
                              :REM*124
430 IF H=12 THEN H=0          :REM*172
440 POKE UT,MI:POKE UT+1,H:POKE
    UT+2,A                    :REM*6
450 PRINT:SYS UI:PRINT        :REM*249
460 NEW                       :REM*108
470 DATA 4C2ACC00000000000000 5
    8130000000000000000 0000000
    0000000000000       :REM*176
480 DATA 0000FFCC0000510D0000 E
    9CC0878A5014 8A93785 01AC23C
    CD017A201BD32       :REM*48
490 DATA 039D22CCBD000039D26CC B
    D140 39D1ECCCA10EBAD 11CC490
    2D002098008D11      :REM*140
500 DATA CC208CCC6885012860048 8
    A489848A000BAFE040 1 D003FE0
    501BD040185FC       :REM*71
510 DATA BD0501 85FDB1FCF00520 D
    2FF90E468A868AA686 0 0878206
    3CC4449535041       :REM*158
520 DATA 5443482000AD11CCC902 F
    00B2063CC4F4646000A2 0010202
    063CC4F4E0D54       :REM*76
530 DATA 4F204F46462C2045 4E54 4
    5522053595320353232 3234 00A
    202A000BD26CC       :REM*107
540 DATA 990003BD22CC9932 03BD 1
    ECC9914 03E8C8C0029 0 E8286 04
    88A489848A591       :REM*133
550 DATA C97FD0032 08CCC68A868 A
    A686C26CCA5A2CD10CC 8D10CCF
    03 0A21CAD0ACC      :REM*88
560 DATA 293D002A21D8E46CDAE 0
    9CCBD45CD8D41CDA200 BD03CC1
    8690 1DD3CCD90      :REM*51
570 DATA 02A9009D03CC9005E8E0 0
    990E96C1ECC3C3C3C0C 021E0C6
    4181F1C1F1E1F       :REM*16
580 DATA 1E1F1F1E1F1E1F0878A5 9
    D100CAD11CCF00730 05 2096CDB
    00EA62DA42E86       :REM*239
590 DATA AE84AFA92B286C22CC28 2
    063CC4449535041 5443 4820455
    2524F522D204E       :REM*216
600 DATA 4F2052454D2032 4E442 0 4
    C494E450060 20A0CDB0 0420D9C
    D186020CDCEB0       :REM*126
610 DATA 30A004B1FAC93AF004C9 8
    FD024A52DA62E38E901 B001CA8
    5FA86FBA000B1       :REM*179
620 DATA FAA04091FAA5FACD12CC D
    0E7EC13CCD0E21860 38 6041502
    0CDCEA90420 11      :REM*243
630 DATA CFA98F2007CF2005CFA4 B
    7F023A9222007CFA000 B1BBC8C
    93AF006C4B790       :REM*148
640 DATA F5A000B1BB2007CFC8C4 B
    790F6A9222007CF2005 CFAD09C
    C202DCFA92D20       :REM*232
650 DATA 07CFAD08CC2020DCFA92D 2
    007CFAD0BCC2029CFAD 0ACC202
    9CF2005CFAD06       :REM*246
660 DATA CCD002A900C2030CFA93A 2
    007CFAD05CC2029CFA9 3A2007C
    FAD04CC2029CF       :REM*31
670 DATA 2005CFAE07CCBDD7CD20 0
    7CFA94D2007CFA9002 0 07CFAD1
    2CCAE13CC85FC       :REM*237
680 DATA 86FDA040B1FCA00091FA E
    6FCD002E6FDE6FAD002 E6FBA5F
    CC52DA5FDE52E       :REM*94
690 DATA 90E2201BCF18A001B1FA F
    01DA004C8B1FAD0FBC8 9865FAA
    AA0009 1FAA5FB      :REM*181
700 DATA 6900C891FA86FA85FB90 D
    DA891FA2024CF690285 2D9001E
    8862E60A52BA6       :REM*197
710 DATA 2C20DCCEB02DAD12CCAE 1
    3CC201FCF8D16CC8E17 CCA003B
    1FA9912CC8810       :REM*170
720 DATA F838AD12CCED16CC8D18 C
```

```
    CAD12CCØD13CCFØØ218 6Ø386ØA
    92Ø84FCAØØØ91       :REM*225
73Ø DATA FAA4FCA9Ø11865FA85FA 9
    ØØ2E6FB6ØA52BA62C85 FA86FB6
    ØA5FAA6FB6ØAØ       :REM*54
74Ø DATA Ø11ØØ51869Ø1AØØØ84FC 2
    Ø48CFA6FCDØØ3AE1DCC BD1ACC2
    ØØ7CFCA1ØF76Ø       :REM*77
75Ø DATA A2FF38E8E964BØFB6964 8
    E1CCCA2FFE8E9ØABØFB 69ØA8E1
    BCC8D1ACCA2Ø2       :REM*4
76Ø DATA BD1ACCDØØ4CA1ØF8E88E 1
    DCCA2Ø218BD1ACC693Ø 9D1ACCC
    A1ØF46Ø41ØØØØ      :REM*153
77Ø DATA                :REM*134
```

Listing 2. Basic Dater C-128 program. (Available on ReRun disk. See order card facing page 24.)

```
1Ø REM DATER 128 BY KEN HUEBNER
                        :REM*24Ø
2Ø UI=DEC("18ØØ")       :REM*227
3Ø UT=UI+3+2:REM MIN,HOUR,AM
                        :REM*1Ø3
4Ø UD=UT+3:UM=UD+1:UY=UD+2:REM
   DAY,MONTH,YEAR       :REM*4Ø
5Ø PRINT"{SHFT CLR}{3 CRSR DNs}
   "                    :REM*177
6Ø PRINT TAB(1Ø)"DATER 128"
                        :REM*38
7Ø PRINT                :REM*223
8Ø BLOAD "DATER128.O"   :REM*17Ø
9Ø PRINT"ENTER THE DATE":REM*95
1ØØ INPUT "(FORMAT: 4-1Ø-199Ø)"
   ;DD$                 :REM*63
11Ø X=Ø:Z=Ø             :REM*234
12Ø X=X+1:IFX>LEN(DD$)THEN 15Ø
                        :REM*113
13Ø A$=MID$(DD$,X,1)    :REM*24Ø
14Ø IF A$<>"-"THEN D$=D$+A$:GOT
   O12Ø                 :REM*166
15Ø IFZ=Ø THEN M=VAL(D$):REM*86
16Ø IFZ=1 THEN D=VAL(D$):REM*62
17Ø IFZ=2 THEN Y=VAL(D$)
                        :REM*178
18Ø D$="":Z=Z+1:IFZ<3 THEN12Ø
                        :REM*126
19Ø IF D<1 OR D>31 THEN 9Ø
                        :REM*1Ø
2ØØ IF Y<1989 OR Y>1999 THEN 9Ø
                        :REM*143
21Ø IF M<1 OR M>12 THEN 9Ø
                        :REM*113
22Ø POKE UD,D-1:POKE UM,M-1:POK
   E UY,Y-19ØØ          :REM*67
23Ø PRINT:PRINT"ENTER THE TIME"
                        :REM*13
24Ø INPUT "(FORMAT: 93ØAM)";T$
                        :REM*2Ø3
25Ø IF LEN(T$)=5 THEN T$="Ø"+T$
                        :REM*27
26Ø IF LEN(T$)<>6 THEN 23Ø
                        :REM*122
27Ø A$=RIGHT$(T$,2)     :REM*7Ø
28Ø MI$=MID$(T$,3,2)    :REM*67
29Ø HR$=MID$(T$,1,2)    :REM*64
3ØØ MI=VAL(MI$):H=VAL(HR$):A=Ø
                        :REM*168
31Ø IF A$="PM" THEN A=1:REM*154
32Ø IF MI<Ø OR MI>59 THEN 23Ø
                        :REM*31
33Ø IF H<1 OR H>12 THEN 23Ø
                        :REM*35
34Ø IF H=12 THEN H=Ø    :REM*118
35Ø POKE UT,MI:POKE UT+1,H:POKE
    UT+2,A              :REM*163
36Ø PRINT:SYS UI:PRINT  :REM*151
37Ø NEW                 :REM*22
```

Listing 3. Dater128.BAS, which creates the ML code named DATER128.O. (Available on ReRun disk. See order card facing page 24.)

```
1Ø REM LISTING 3 -- SAVE TO DIS
   K AS DATER128.BAS. RUN TO CR
   EATE "DATER128.O"    :REM*131
2Ø UI=DEC("18ØØ")       :REM*227
3Ø PRINT"PLEASE WAIT..."
                        :REM*227
4Ø Y=UI:READ A$         :REM*48
5Ø B$=MID$(A$,1,2Ø)+MID$(A$,22,
   2Ø)+MID$(A$,43,2Ø)   :REM*2Ø8
6Ø FOR X=1 TO 59 STEP 2 :REM*67
7Ø C$=MID$(B$,X,2):H$=LEFT$(C$,
   1):L$=RIGHT$(C$,1)   :REM*2Ø6
8Ø H=VAL(H$):IFH$>"9"THEN H=ASC
   (H$)-55              :REM*56
9Ø L=VAL(L$):IFL$>"9"THEN L=ASC
   (L$)-55              :REM*73
1ØØ POKEY,H*16+L        :REM*88
11Ø Y=Y+1:NEXTX:READA$  :REM*82
12Ø IFA$<>""THEN 5Ø     :REM*243
13Ø BSAVE "DATER128.O",BØ,P(UI)
   TO P(Y)              :REM*147
14Ø DATA 4C2A18ØØØØØØØØØØØØØØ 5
   813ØØØØØØØØØØØØØØØØ ØØØØØØØ
   ØØØØØØØØØØØØØ       :REM*177
15Ø DATA ØØØØD8180ØØØ2A19ØØØØ C
   218Ø878ADØØFF48A9ØØ 8DØØFFA
   C2318DØ17A2Ø1        :REM*212
16Ø DATA BD32Ø39D2218BDØØØA9D 2
   618BD14Ø39D1E18CA1Ø EBAD111
   849Ø2DØØ2Ø98Ø        :REM*157
17Ø DATA 8D11182Ø6618688DØØFF 2
   86ØØ8782Ø7DFF444953 5Ø41544
   3482ØØØAD1118        :REM*226
18Ø DATA C9Ø2FØØB2Ø7DFF4F4646 Ø
   ØA2ØØ1Ø1F2Ø7DFF4F4E ØD544F2
   Ø4F46462C2Ø45        :REM*56
19Ø DATA 4E5445522Ø5359532Ø36 3
   13434ØØA2Ø2AØØØBD26 1899ØØØ
   ABD2218932Ø3         :REM*19
2ØØ DATA BD1E189914Ø3E8C8CØØ2 9
   ØE8286Ø488A489848A5 91C97FD
   ØØ32Ø661868A8        :REM*68
21Ø DATA 68AA686C2618A5A2CD1Ø 1
   88D1Ø18FØ3ØA21CADØA 1829Ø3D
   ØØ2A21D8E1F19        :REM*53
22Ø DATA AEØ918BD1E198D1A19A2 Ø
   ØBDØ3181869Ø1DD1519 9ØØ2A9Ø
   Ø9DØ3189ØØ5E8        :REM*244
23Ø DATA EØØ99ØE96C1E183C3C3C Ø
   CØ21EØC64181F1C1F1E 1F1E1F1
   F1E1F1E1FØ878        :REM*255
24Ø DATA A59D1ØØCAD1118FØØ73Ø Ø
   52Ø7119BØ1ØAE1Ø12AC 111286A
   E84AFA92D286C        :REM*253
25Ø DATA 22182820 7DFF4449535Ø 4
   1544348Ø4552524F52 2D2Ø4E4
   F2Ø52454D2Ø32        :REM*99
26Ø DATA 4E442Ø4C494E45ØØ6ØAD Ø
   ØFF48A93F8DØØFF2Ø88 19BØØ42
   ØC31918688DØØ        :REM*2
27Ø DATA FF6Ø2ØBB1AB032AØØ4B1 F
   AC93AFØØ4C98FDØ26AD 1Ø12AE1
   11238E9Ø1BØØ1        :REM*34
28Ø DATA CA85FA86FBAØØØB1FAAØ 4
   Ø91FAA5FACD1218DØE7 EC1318D
   ØE2186Ø386Ø41        :REM*221
29Ø DATA 5Ø2ØBB1AA9Ø42ØFF1AA9 8
   F2ØF51A2ØF31AA4B7FØ 23A9222
   ØF51AAØØØB1BB        :REM*17
3ØØ DATA C8C93AFØØ6C4B79ØF5AØ Ø
   ØB1BB2ØF51AC8C4B79Ø F6A9222
   ØF51A2ØF31AAD        :REM*125
31Ø DATA Ø9182Ø1B1BA92D2ØF51A A
   DØ8182Ø1B1BA92D2ØF5 1AADØB1
   82Ø171BADØA18        :REM*79
32Ø DATA 2Ø171B2ØF31AADØ618DØ Ø
   2A9ØC2Ø1E1BA93A2ØF5 1AADØ51
   82Ø171BA93A2Ø        :REM*248
33Ø DATA F51AADØ4182Ø171B2ØF3 1
   AAEØ718BDC1192ØF51A A94D2ØF
   51AA9ØØ2ØF51A        :REM*2Ø8
34Ø DATA AD1218AE131885FC86FD A
   Ø4ØB1FCAØØØ91FAE6FC DØØ2E6F
   DE6FADØØ2E6FB        :REM*139
35Ø DATA A5FCCD1Ø12A5FDED1112 9
   ØE92ØØ91B18AØØ1B1FA FØ1DAØØ
   4C8B1FADØFBC8        :REM*179
36Ø DATA 9865FAAAAØØØ91FAA5FB 6
   9ØØC891FA86FA85FB9Ø DDA891F
   A2Ø121B69Ø28D        :REM*172
37Ø DATA 1Ø129ØØ1E88E11126ØA5 2
   DA62E2ØCA1ABØ2DAD12 18AE131
   82ØØD1B8D1618        :REM*71
38Ø DATA 8E1718AØØ3B1FA991218 8
   81ØF838AD1218ED1618 8D1818A
   D1218ØD1318FØ        :REM*122
39Ø DATA Ø2186Ø386ØA92Ø84FCAØ Ø
   Ø91FAA4FCA9Ø11865FA 85FA9ØØ
   2E6FB6ØA52DA6        :REM*222
4ØØ DATA 2E85FA86FB6ØA5FAA6FB 6
   ØAØØ11ØØ51869Ø1AØØØ 84FC2Ø3
   61BA6FCDØØ3AE        :REM*18Ø
41Ø DATA 1D18BD1A182ØF51ACA1Ø F
   76ØA2FF38E8E964BØFB 69648E1
   C18A2FFE8E9ØA        :REM*251
42Ø DATA BØFB69ØA8E1B188D1A18 A
   2Ø2BD1A18DØØ4CA1ØF8 E88E1D1
   8A2Ø218BD1A18        :REM*172
43Ø DATA 693Ø9D1A18CA1ØF46Ø32 Ø
   ØØØØØØØØØØØØØØØØØØ ØØØØØØØ
   ØØØØØØØØØØØØ        :REM*164
44Ø DATA                :REM*57
```

■

Connex

Challenge your eye and your hand with this Tetris-type game for the C-128.

By LEONARD MORRIS

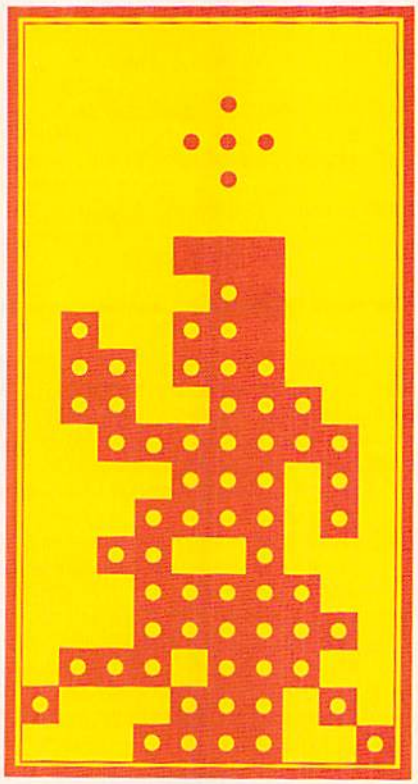
Want to make some good connections? Then get to know Connex, a C-128 game that's reminiscent of the currently popular Tetris. The object of Connex is to place randomly generated patterns of five dots on the gameboard so they connect to each other and fill as many board spaces as possible.

Connex can accommodate one or two players, and two can share the same gameboard or have separate boards. Players 1 and 2 use joysticks in ports 1 and 2, respectively.

When the first pattern appears at the top of the screen, move it onto the gameboard so it touches the single dot already there; then, before the timer runs out, press the firebutton to place the pattern. You earn points according to the number of dots in the pattern that touch the single dot. If the pattern doesn't touch the dot, overlaps the dot or hangs partly off the gameboard, or if time runs out, you're charged with an error and lose the pattern and the turn.

When the second pattern appears, connect it to the first, and so forth, always filling as many spaces on the board as possible. Unlike Tetris, you can move a new Connex pattern across the patterns already placed.

If you make four errors, the game ends and you must start over, but if you



fill 75 percent of the board, you advance to the next level of play. You can also advance to the next level—and receive an extra 1000 points—by completely filling a row with dots. That row then vanishes and the rows above it move down to take up the space.

Connex has 16 levels, each made more difficult than the last by an increasing number of predator circles that meander around the gameboard. If one of these circles touches a pattern you've moved onto the board but haven't yet placed, you lose the pattern and are charged with an error.

When two are playing, the color of the random pattern indicates whose turn it is. If the pattern is yellow, it's the first player's turn; if it's red, the second player moves. Although there's a time limit for each turn, I didn't put a timer on the screen, both to heighten suspense and because the action is too fast to watch it, anyway.

As you play, three numbers are always displayed on the screen: your current score, your error status and the percentage of the board you've covered so far.

Type in Connex using *RUN*'s Checksum program to detect any typing errors, and make sure you save the program to disk before running it. Then go ahead and make some good connections! R

Leonard Morris is an electronics technician and freelance C-128 programmer.

Listing 1. Connex program. (Available on ReRun disk. See order card facing page 24.)

```
1 REM CONNEXS -- LEONARD MORRIS
                              :REM*69
5 FAST:MA=4:SW=75:DIMCE(16),SN(
  16),RP(16):GOSUB58:GRAPHICØ,1
  :COLORØ,1:COLOR4,1          :REM*8
6 REM OPTIONS                 :REM*127
7 SLOW:WINDOWØ,Ø,39,24,1:PRINTT
  AB(7)"{CTRL 2}{2 CRSR DNs}{CT
  RL G}NUMBER OF PLAYERS (1 OR
  2)":GETKEYN$                :REM*85
8 NP=VAL(N$):IFNP=ØORNP>2THENSO
  UND1,4ØØ,2Ø:GOTO7           :REM*15Ø
9 IFNP=2THENPRINTTAB(7)"{CTRL G
  }{CRSR DN}{COMD 6}{CTRL G}GAM
  EBOARD ({CTRL 9}S{CTRL Ø}AME
  OR {CTRL 9}D{CTRL Ø}IFFERENT
  )":ELSE11                   :REM*11Ø
1Ø GETKEYGB$:IFGB$="S" ORGB$="D
   "THEN11:ELSESOUND1,5ØØ,2Ø:GO
   TO1Ø                       :REM*82
11 PRINTTAB(5)"{CRSR DN}{CTRL G
   }{COMD 7}TIME LIMIT/ MOVE ({
   CTRL 9}S{CTRL Ø}HORT OR {CTR
   L 9}L{CTRL Ø}ONG)"         :REM*229
12 GETKEYY$:IFY$="S"THENTM=7:EL
   SETM=15                    :REM*2Ø2
13 REM GAMEBOARD              :REM*2Ø6 ►
```

RUN it right: **C-128 (in 40-Column mode); one or two joysticks**

DAMARK
INTERNATIONAL, INC.

ORDER TODAY!!

1-800-729-9000

THE *"GREAT DEAL"* CATALOG

LEADING EDGE — 386 FULL 32-BIT COMPUTER & VGA COLOR MONITOR

- 100% IBM compatible.
- 32-bit 80386 microprocessor.
- 8/16 MHz speed (switchable).
- 40 MB—22 millisecond hard drive with integral 1:1 interleave controller.
- 1 MB RAM expandable to 8 MB.
- One 5.25" 1.2 MB floppy disk drive.
- Four 16-bit expansion slots. • Two 8-bit expansion slots.
- One 16-bit VGA video adaptor with 256K memory expandable to 512K, displays up to 1024 x 768 res.
- 1 Centronics parallel port. • 2 RS-232C serial ports.
- 80387 math coprocessor socket. • Zero wait state.
- Includes software: MS-DOS 3.3, & GW-BASIC.
- Supports all VGA/EGA/CGA/MDA/ Hercules® modes.
- Dim.: 15.5" x 15.9" x 6.1".

VGA Color Monitor:

- 14" high resolution tilt swivel monitor.
- IBM compatible.
- .31 mm dot pitch.
- Analog input signal.
- Resolution: 640 x 480.
- **Full 20 Month Factory Warranty!**
- **Factory New & Perfect!**

Mfr.Sugg. Retail: **$3,295.00**

DAMARK PRICE:

$1999.99

Item No. B-1942-133967
Insured Ship/Hand.: $40.00

BLACK&DECKER — DELUXE WIRELESS SECURITY SYSTEM

- Intelligent home security system.
- Detects intruder during entry.
- Wireless for easy installation.
- Difficult to defeat because of new, advanced technology.
- Lamp command flashes lamp upon intrusion.
- Signal relay—relays entry sensor intrusion signal from a remote area of your home to controller.
- Tamper resistant. • 85 decibel alarm on inside siren.
- Piercing 120 decibel outside siren.
- Fail-safe battery back-up. • Low battery warning.
- **2 Year Warranty!**

FACTORY NEW! FACTORY PERFECT!

Includes:

- 8 entry sensors, 1 system controller (includes inside siren), 1 signal relay, 1 lamp command, 1 outside siren, 2 window stickers, 1 yard sign, and complete hardware and batteries.

Mfr. Sugg. Retail: **$698.00**

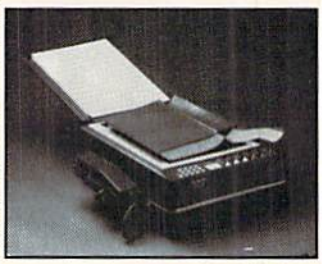
DAMARK PRICE:

$299.99

Item No. B-1942-133389
Insured Ship/Hand.: $15.00

SHARP — COPIER/FAX MACHINE UX80

Sharp enforces strict quality control standards. These copier/fax machines are factory serviced, but like new! As a result, we can offer them to you at UNBELIEVABLE SAVINGS!



SUPER SAVINGS!!

- Photocopier, fax machine and telephone in one!
- Sends an 8-1/2" x 11" page as fast as 4 seconds.
- Enlargement and reduction capabilities.
- 8 level half-tone transmission for fine detail.
- Automatic contrast adjustment.
- Multi-function telephone with on-hook dialing.
- G3 communication compatibility.
- Telephone/ fax automatic switchover.
- Thermal recording process
- Dim.: 13.9"W x 6.3"H x 16.1"D.
- Weight: Approx. 23.4 lbs.
- Model #: UX80.
- **Full Factory Warranty!**

Mfr. Sugg. Retail: **$2,295.00**

DAMARK PRICE:

$499.99

Item No. B-1942-133934
Insured Ship/Hand.: $29.50

XEROX — 635 DIABLO WIDE CARRIAGE DAISYWHEEL PRINTER WITH DUAL BIN AUTO SHEET FEEDER

- Print speed: 55 CPS.
- 255 typestyles & 15 foreign language daisywheels with 10, 12, 15 pitch and proportional spacing.
- 100% IBM compatible.
- Auto paper loading. • Full word processing capabilities.
- Max print line width is 13.2" and paper width is 16.5".
- Letter quality printer. • Prints 132 columns at 10 CPI.
- 158 columns at 12 CPI. • 197 columns at 15 CPI.
- Snap in IBM/Centronics interface cartridge (with cable) for instant compatibility with most microcomputer systems. • Quiet operation; noise level only 56 dBa.
- Can operate on 110/220 VAC 50/60 Hz.
- Printer weight: 30 lbs.

Dual Bin Sheet Feeder features:

- Includes Diablo F52 dual bin sheet feeder with 240 sheet capacity.
- Drop-in installation.
- Model #: 635.
- **90 Day Warranty!**
- **Factory New! Factory Perfect!**

Mfr. Sugg. Retail: **$1,890.00**

DAMARK PRICE:

$299.99

Item No. B-1942-135350
Insured Ship/Hand.: $40.00

ZENITH — XT TURBO IBM COMPATIBLE COMPUTER SYSTEM

- 20 MB Hard Drive.
- One 720K 3-1/2" disk drive.
- 640K RAM.
- 84-key keyboard.
- 8088 16 bit microprocessor at 7.16 MHz.
- 14" high resolution black and white monitor.
- High resolution graphics: 640 x 200. CGA compatible.
- Serial & parallel interfaces.
- Mouse port.
- Includes: MS-DOS 3.2, MS-DOS Manager, GW-BASIC.
- Dim.: 13"W x 14.5"H x 11"D (without keyboard).
- Model #: EZPC 20 plus EZA4 upgrade.
- Wt.: Approx. 28 lbs.
- **One Year Warranty!**
- **Factory New & Perfect!**

20 MB HARD DRIVE!

Mfr. Sugg. Retail: **$1,999.00**

DAMARK PRICE:

$799.99

Item No. B-1942-117721
Insured Ship/Hand.: $30.00

SmartMax — Fax/Phone Auto Switch

- No need for a dedicated fax line.
- Fax/phone autoswitch allows your new fax to share existing phone line.
- Works on all Group 3 fax machines.
- Single switch to lock out either voice or fax calls.
- Front panel status lights indicate modes of operation.
- Smartmax handles power outages by automatically switching to phone-only mode.
- Allows manual override so you can send a fax to the person you're talking to on the phone.
- 24-Hour customer service line.
- Easy installation.
- UL listed
- FCC certified.
- Dim.: 4" X 7" X 1-1/2".
- Weight: 2-1/2" lbs.
- Model #: MX 1030.
- **2 Year Warranty!**
- **Factory New! Factory Perfect!**

Mfr. Sugg. Retail: **$245.00**

DAMARK PRICE:

$149.99

Item No. B-1942-128934
Insured Ship/Hand.: $7.50

FOR FASTEST SERVICE CALL TOLL FREE

1-800-729-9000

CUSTOMER SERVICE: 1-612-566-4940

VISA MasterCard DISCOVER

NAME _____

ADDRESS _____

CITY _____ ST ____ ZIP _____

PHONE _____

☐ Check/Money Order ☐ VISA SIGNATURE _____

☐ MasterCard ☐ Discover CARD NO. _____ EXP. DATE _____

QTY	DESCRIPTION	ITEM #	S/H/I	PRICE

DELIVERY TO 48 U.S. CONTINENTAL STATES ONLY

SUB TOTAL	
in MN add 6% Sales Tax	
Total S/H/I	
GRAND TOTAL	

B-1942

Send To: DAMARK INTERNATIONAL, INC., 6707 Shingle Creek Parkway, Minneapolis, MN 55430

Circle 48 on Reader Service card.

CONNEX

```
14 PRINT"{SHFT CLR}{6 CRSR DNs}
   {CRSR RT}{CTRL 2}{CTRL 9}{CO
   MD A}";:FORT=ØTO24:PRINT"{SH
   FT *}";:NEXT:PRINT"{COMD S}"
                        :REM*229
15 FORT=ØTO15:PRINT"{CRSR RT}{C
   TRL 9}{SHFT -}";TAB(27)"{SHF
   T -}":NEXT           :REM*229
16 PRINT"{CRSR RT}{CTRL 9}{COMD
    Z}";:FORT=ØTO24:PRINT"{SHFT
    *}";:NEXT:PRINT"{COMD X}"
                        :REM*132
17 FORT=1TO2:IFSC(T)>HSTHENHS=S
   C(T):NEXT:ELSENEXT   :REM*255
18 REM SCORES           :REM*193
19 WINDOW29,19,39,24,1:PRINT"{C
   TRL 9}{COMD 6}* CONNEXS *":P
   RINT"{CTRL 9}{CTRL 6}{3 SPAC
   Es}HIGH{7 SPACEs}SCORE{3 SPA
   CEs}{CTRL 4}";:PRINTUSING"##
   #,###,###";HS        :REM*63
2Ø WINDOWØ,Ø,39,24:CHAR1,14,22,
   "{SHFT Q}",1:FORT=1TO8:CP(T)
   =Ø:NE(T)=Ø           :REM*16Ø
21 SC(T)=Ø:LV(T)=1:MOVSPRT,1ØØ,
   16Ø:NEXT:SK=1:SQ=Ø:SYS5952
                        :REM*58
22 SC=Ø:FORT=1TONP:POKES1+1,N2(
   T):SYSS1:PN=T:GOSUB42:GOSUB4
   9:GOSUB45:NEXT:PN=Ø  :REM*115
23 REM TURN             :REM*3Ø
24 PN=PN+1+(PN=NP)*NP:FORT=1TO5
   :SPRITET,1,PC(PN):NEXT:POKE2
   54,PC(PN)-1          :REM*133
25 SYSHM:WINDOWØ,24,39,24,1:COL
   OR5,PC(PN)           :REM*157
26 PRINTTAB(7)"{CTRL 9}{2 SPACE
   s}LEVEL #"STR$(LV(PN))" {CTR
   L Ø}";:IFCP(PN)THEN24
                        :REM*136
27 IFGB$="D"ANDSKTHENPOKES1+1,N
   1(PN):SYSS1:POKER1+1,N2(PN):
   SYSR1:IFSQTHENSK=Ø   :REM*74
28 SOUND1,5ØØØØ,2Ø:POKEKS,SN(LV
   (PN)):SYSRP(LV(PN))  :REM*192
29 POKEIS,1:POKEBC,Ø:TI$="ØØØØØ
   Ø"                   :REM*1Ø
3Ø J=JOY(PN):SYSCC(CE(LV(PN)))
                        :REM*59
31 REM INTERACTIONS     :REM*171
32 RD=RD+1:IFRD=4THENRD=Ø:RK=RK
   +1+(RK=2)*3:POKERF+RK*2,INT(
   RND(1)*8)            :REM*6
33 IFVAL(RIGHT$(TI$,2))>TMTHENS
   YSPB:GOTO38          :REM*198
34 IFJ>127THENPOKEIS,Ø:SYSPB:GO
   TO38                 :REM*224
35 IFJTHENSYSJS(J):SOUND1,5ØØØ,
   1                    :REM*135
36 IFPEEK(BC)THENPOKEIS,Ø:NE(PN
   )=NE(PN)+1:POKEBC,Ø:SOUND2,9
   999,3Ø:GOSUB45:GOTO46
                        :REM*228
37 GOTO3Ø               :REM*165
38 IFPEEK(BC)THENPOKEIS,Ø:SC=-1
   ØØ*LV(PN):NE(PN)=NE(PN)+1:GO
   SUB42:POKEBC,Ø:GOSUB45:GOTO4
   6                    :REM*167
39 SC=LV(PN)*1Ø*PEEK(25Ø):GOSUB
   49:IFYP>SWTHENGOSUB51
                        :REM*2Ø1
4Ø SYSL1:IFPEEK(LC)THENSC(PN)=S
   C(PN)+1ØØØ:NE(PN)=NE(PN)-1:L
   V(PN)=LV(PN)+1+(LV(PN)=16):G
   OSUB45               :REM*135
41 GOSUB42:GOTO23       :REM*221
42 SC(PN)=SC(PN)+SC     :REM*5Ø
43 WINDOW(PN-1)*16+2,Ø,(PN-1)*1
   6+12,2,1:COLOR5,PC(PN):PRINT
   "{CTRL 9}{2 SPACEs}PLAYER{2
   SPACEs}"             :REM*11
44 PRINT"{CTRL 9} #{CTRL G}"STR
   $(PN)" SCORE":PRINT"{CTRL 9}
   {COMD 8}";:PRINTUSING"##,###
   ,###";SC(PN);:RETURN:REM*245
45 WINDOW(PN-1)*16+2,4,(PN-1)*1
   6+12,5,1:COLOR5,PC(PN):PRINT
   "{CTRL Ø}{2 SPACEs}ERRORS":P
   RINT" LEFT "MA-NE(PN)-1;:RET
   URN                  :REM*56
46 IFNE(PN)=MATHENWINDOWØ,24,39
   ,24,1:COLOR5,PC(PN):PRINT"{C
   TRL 9} PLAYER #"PN"{CRSR LF}
    YOUR GAME IS OVER";:CP(PN)=
   1:GOSUB53:SQ=1:IFNP=1THEN55
                        :REM*8
47 IFCP(1)=1ANDCP(2)=1THEN55
                        :REM*2
48 GOTO23               :REM*183
49 SYSCK:YP=1ØØ*(256*PEEK(V2)+P
   EEK(V1))/4ØØ         :REM*136
5Ø COLOR5,PC(PN):WINDOW3Ø,4+(PN
   -1)*6,39,(PN-1)*6+8,1:PRINT"
   {CTRL 9}PLAYER #"STR$(PN):PR
   INT"{CTRL 9}{2 SPACEs}COVERE
   D {CTRL 2}";:PRINTUSING"####
   ##.##";YP;:PRINT"%":RETURN
                        :REM*53
51 WINDOW6,1Ø,21,18,1:PRINT"{CT
   RL 2}{CRSR DN}{3 SPACEs}YOU
   HAVE":PRINT"{2 SPACEs}PASSED
    THE":PRINT" "SW"% MARK":FOR
   T=1TO5:SOUND1,T*1ØØØ,2Ø:SLEE
   P1:NEXT:SYSCS:LV(PN)=LV(PN)+
   1:NE(PN)=NE(PN)-1    :REM*24Ø
52 WINDOWØ,Ø,39,24:CHAR1,14,22,
   "{SHFT Q}",1:RETURN :REM*235
53 FORT=1TO3:SOUNDT,4ØØ*T,6Ø:SL
   EEP1:NEXT:WINDOWØ,24,39,24,1
   :RETURN              :REM*24
54 REM GAME OVER        :REM*236
55 WINDOW4,11,26,15,1:PRINT"{2
   CRSR DNs}{CTRL 8}{CTRL 9} TH
   E GAME IS NOW OVER {CTRL Ø}{
   CRSR DN}":PRINT"{CTRL 2} PRE
   SS {CTRL 9}*{CTRL Ø} FOR NEW
    GAME":POKEKS,Ø       :REM*14Ø
56 GETKEYY$:IFY$="*"THEN7:ELSE5
   6                    :REM*227
57 REM SPRITES          :REM*141
58 FAST:GRAPHIC1,1:CHAR1,Ø,Ø,"{
   SHFT Q}":SSHAPESY$,Ø,Ø,23,21
   :FORT=1TO5:SPRSAVSY$,T
                        :REM*62
59 SPRITET,Ø,2:NEXT:GRAPHIC1,1:
   FORT=6TO8:SPRITET,Ø,T+3:NEXT
                        :REM*137
6Ø FORT=2TO3:CIRCLE1,8,8,T,T:NE
   XT:SSHAPESY$,Ø,Ø,23,21:SPRSA
   VSY$,6:GRAPHIC1,1    :REM*3Ø
61 FORT=3TO4:CIRCLE1,8,8,T,T:NE
   XT:SSHAPESY$,Ø,Ø,23,21:SPRSA
   VSY$,7:GRAPHIC1,1    :REM*213
62 FORT=4TO6:CIRCLE1,8,8,T,T:NE
   XT:SSHAPESY$,Ø,Ø,23,21:SPRSA
   VSY$,8               :REM*157
63 SLOW:GRAPHIC2,1,15:COLOR4,1:
   COLORØ,1:CHAR,Ø,24,"CONNEXS"
   ,1:COLOR1,2          :REM*231
64 FORX=ØTO56:FORY=ØTO8:LOCATEX
   ,Y+19Ø:IFRDOT(2)THENBOX1,X*5
   +2Ø,Y*5+5Ø,X*5+25,Y*5+55,45,
   1                    :REM*4Ø
65 NEXT:NEXT:COLOR1,6:CHAR1,1Ø,
   14," ONE MOMENT PLEASE ",1
                        :REM*2Ø
66 REM VARIABLES        :REM*68
67 BC=6655:POKEBC,Ø:LC=BC-1:CS=
   5512:CK=5971:IS=6138:L1=5469
   :V1=5894:V2=V1+1     :REM*154
68 P1=13Ø6:P2=6656:C2=P2+32:PB=
   521Ø:R1=5685:S1=5627:RF=1433
   6:POKERF,2           :REM*92
69 HM=6165:KS=53269:M(1)=5783:M
   (2)=582Ø:POKE5781,61:REM*171
7Ø FORT=ØTO15:P3=INT(P1/256):C3
   =P3+212:P4=P1-256*P3:POKEP2+
   T*2,P3               :REM*9Ø
71 POKEC2+T*2,C3:POKEP2+1+T*2,P
   4:POKEC2+1+T*2,P4:P1=P1+4Ø:N
   EXT                  :REM*114
72 FORT=1TO8:READJS$:JS(T)=DEC(
   JS$):NEXT:FORT=ØTO3:READJS$:
   CC(T)=DEC(JS$):NEXT :REM*117
73 N2(1)=32:N2(2)=48:N1(1)=48:N
   1(2)=32:PC(1)=8:PC(2)=3
                        :REM*224
74 FORT=4864TO6386:READA$:POKET
   ,DEC(A$):NEXT:GRAPHICØ,1
                        :REM*49
75 SYSDEC("1338"):FORT=ØTO15:FO
   RU=ØTO4:READY:POKEDEC("1CØØ"
   )+T*16+Y,1:NEXT:NEXT:REM*166
76 FORT=1TO16:READSN(T),RP(T),C
   E(T):NEXT:RETURN     :REM*175
77 DATA 17CØ,17D4,1784,17DA,17A
   C,17EØ,1798,17E6,132C,1881,1
   3ØØ,1836             :REM*84
78 DATA AØ,ØØ,EE,FF,1A,AD,FF,1A
   ,29,ØF,FØ,F6,85,FE,B9,2Ø,1A,
   8D,2Ø,13,B9,21       :REM*1
79 DATA 1A,8D,1F,13,A2,ØØ,A5,FE
   ,9D,72,DB,E8,EØ,19,DØ,F6,C8,
   C8,CØ,2Ø,DØ,D6       :REM*2
8Ø DATA 6Ø,FØ,Ø6,A9,Ø1,8D,FF,19
   ,6Ø,4C,97,14,A2,ØØ,A9,ØØ,9D,
   ØØ,1C,E8,DØ,F8       :REM*21Ø
81 DATA 6Ø,FØ,FE,A2,ØØ,BD,CØ,1C
   ,9D,ØØ,ØB,E8,EØ,1Ø,DØ,F5,2Ø,
   19,14,6Ø,A2,Ø3       :REM*158
82 DATA AØ,ØØ,2Ø,7Ø,13,A2,Ø2,2Ø
   ,7Ø,13,A2,Ø1,2Ø,7Ø,13,A2,ØØ,
   2Ø,7Ø,13,2Ø,19       :REM*1
83 DATA 14,6Ø,A9,Ø4,85,FE,BD,CØ
   ,1C,99,ØØ,ØB,C8,E8,E8,E8,E8,
   C6,FE,DØ,F1,6Ø       :REM*69
84 DATA A2,ØØ,AØ,Ø3,2Ø,A4,13,A2
```

CONNEX

```
,Ø1,AØ,Ø7,2Ø,A4,13,A2,Ø2,AØ,
ØB,2Ø,A4,13,A2          :REM*25Ø
85 DATA Ø3,AØ,ØF,2Ø,A4,13,2Ø,19
,14,6Ø,A9,Ø4,85,FE,BD,CØ,1C,
99,ØØ,ØB,88,E8          :REM*225
86 DATA E8,E8,E8,C6,FE,DØ,F1,6Ø
,ØØ,A2,ØF,AØ,ØØ,B9,CØ,1C,9D,
ØØ,ØB,CA,C8,CØ          :REM*143
87 DATA 1Ø,DØ,F4,2Ø,19,14,6Ø,A2
,ØØ,AØ,ØØ,BD,D6,11,DD,1Ø,ØB,
FØ,ØF,1Ø,Ø8,FE          :REM*13Ø
88 DATA D6,11,AØ,Ø1,4C,E8,13,DE
,D6,11,AØ,Ø1,BD,D7,11,DD,11,
ØB,FØ,ØF,1Ø,Ø8          :REM*7
89 DATA FE,D7,11,AØ,Ø1,4C,FF,13
,DE,D7,11,AØ,Ø1,E8,E8,EØ,ØA,
DØ,CC,A9,Ø2,85          :REM*8
9Ø DATA FE,A9,ØØ,85,FD,C6,FD,DØ
,FC,C6,FE,DØ,F4,98,DØ,B5,6Ø,
AØ,ØØ,84,FA,A9          :REM*217
91 DATA ØØ,85,FB,A5,FA,ØA,ØA,18
,65,FB,AA,BD,ØØ,ØB,FØ,18,A5,
FB,ØA,ØA,ØA,18          :REM*59
92 DATA 69,8Ø,99,1Ø,ØB,A5,FA,ØA
,ØA,ØA,18,69,32,99,11,ØB,C8,
C8,E6,FB,A5,FB          :REM*191
93 DATA C9,Ø4,DØ,D3,E6,FA,A5,FA
,C9,Ø4,DØ,C7,2Ø,CD,13,6Ø,A2,
ØØ,BD,D6,11,38          :REM*2Ø
94 DATA E9,18,4A,4A,4A,85,FA,BD
,D7,11,38,E9,32,4A,4A,4A,85,
FB,A9,Ø4,85,FD          :REM*23
95 DATA A5,FA,85,FC,A5,FB,FØ,1Ø
,A5,FC,18,69,28,85,FC,9Ø,Ø2,
E6,FD,C6,FB,4C          :REM*163
96 DATA 7A,14,AØ,ØØ,B1,FC,C9,2Ø
,4C,2D,13,A5,FC,9D,3Ø,ØB,A5,
FD,9D,31,ØB,E8          :REM*31
97 DATA E8,EØ,ØA,DØ,B5,4C,DA,14
,A5,FC,38,E9,28,85,FC,BØ,Ø2,
C6,FD,B1,FC,C9          :REM*166
98 DATA D1,6Ø,A5,FC,18,69,27,85
,FC,9Ø,Ø2,E6,FD,B1,FC,C9,D1,
6Ø,A5,FC,18,69          :REM*22Ø
99 DATA Ø2,85,FC,9Ø,Ø2,E6,FD,B1
,FC,C9,D1,6Ø,AØ,ØØ,84,FA,A2,
ØØ,BD,3Ø,ØB,85          :REM*167
1ØØ DATA FC,BD,31,ØB,85,FD,2Ø,A
A,14,DØ,Ø2,E6,FA,2Ø,BA,14,D
Ø,Ø2,E6,FA,2Ø,CA         :REM*234
1Ø1 DATA 14,DØ,Ø2,E6,FA,2Ø,BA,1
4,DØ,Ø2,E6,FA,E8,E8,EØ,ØA,D
Ø,D4,A5,FA,DØ,Ø3         :REM*98
1Ø2 DATA 4C,2F,13,A2,ØØ,BD,3Ø,Ø
B,85,FC,BD,31,ØB,85,FD,A9,D
1,91,FC,E8,E8,EØ         :REM*251
1Ø3 DATA ØA,DØ,EC,6Ø,AD,Ø7,DC,2
9,ØF,ØA,ØA,ØA,ØA,8D,48,13,8
D,75,13,8D,A9,13         :REM*4
1Ø4 DATA 8D,BE,13,EE,2F,ØB,AD,2
F,ØB,29,Ø3,DØ,Ø3,4C,45,13,C
9,Ø1,DØ,Ø3,4C,56         :REM*253
1Ø5 DATA 13,C9,Ø2,DØ,Ø3,4C,84,1
3,4C,B9,13,A9,ØØ,8D,FE,19,A
Ø,ØØ,B9,ØØ,1A,8D         :REM*234
1Ø6 DATA 74,15,B9,Ø1,1A,8D,73,1
5,A2,ØØ,BD,72,Ø7,C9,2Ø,FØ,Ø
8,E8,EØ,19,DØ,F4         :REM*96
1Ø7 DATA 2Ø,B2,15,C8,C8,CØ,2Ø,D
Ø,DD,6Ø,AØ,ØØ,B9,ØØ,1A,8D,9
C,15,B9,Ø1,1A,8D         :REM*99
1Ø8 DATA 9B,15,A2,ØØ,A9,2Ø,9D,7
2,Ø7,E8,EØ,19,DØ,F6,C8,C8,C
Ø,2Ø,DØ,E2,6Ø,ØØ         :REM*165
1Ø9 DATA 19,DØ,FØ,6Ø,EA,EA,EA,6
Ø,EE,FE,19,98,8D,FC,19,AD,7
4,15,8D,E9,15,8D         :REM*79
11Ø DATA EC,15,AD,73,15,8D,E8,1
5,AD,E8,15,38,E9,28,8D,E8,1
5,8D,EB,15,BØ,Ø6         :REM*129
111 DATA CE,E9,15,CE,EC,15,AD,E
C,15,C9,Ø4,FØ,13,A2,ØØ,AØ,2
8,BD,F2,Ø4,99,F2         :REM*138
112 DATA Ø4,C8,E8,EØ,19,DØ,F4,4
C,C8,15,2Ø,EC,17,A8,6Ø,A9,3
Ø,8D,1A,16,A9,ØØ         :REM*67
113 DATA 8D,19,16,AØ,ØØ,B9,ØØ,1
A,8D,17,16,B9,Ø1,1A,8D,16,1
6,A2,ØØ,BD,72,Ø7         :REM*157
114 DATA 9D,8Ø,32,E8,EØ,19,DØ,F
5,AD,19,16,18,69,28,8D,19,1
6,9Ø,Ø3,EE,1A,16         :REM*1Ø7
115 DATA C8,C8,CØ,2Ø,DØ,D3,6Ø,A
9,2Ø,8D,51,16,A9,ØØ,8D,5Ø,1
6,AØ,ØØ,B9,ØØ,1A         :REM*1Ø9
116 DATA 8D,54,16,B9,Ø1,1A,8D,5
3,16,A2,ØØ,BD,8Ø,22,9D,72,Ø
7,E8,EØ,19,DØ,F5         :REM*249
117 DATA AD,5Ø,16,18,69,28,8D,5
Ø,16,9Ø,Ø3,EE,51,16,C8,C8,C
Ø,2Ø,DØ,D3,6Ø,EA         :REM*255
118 DATA A2,ØØ,A9,ØØ,9D,ØØ,ØB,E
8,EØ,1Ø,DØ,F6,A2,Ø5,AD,Ø6,D
C,29,ØF,A8,B9,ØØ         :REM*199
119 DATA ØB,DØ,F5,A9,Ø1,99,ØØ,Ø
B,CA,DØ,ED,4C,19,14,FF,3E,B
D,E1,11,C9,62,FØ         :REM*224
12Ø DATA Ø3,DE,E1,11,6Ø,BD,E1,1
1,C9,E2,FØ,Ø3,FE,E1,11,6Ø,B
D,EØ,11,C9,1D,FØ         :REM*146
121 DATA Ø3,DE,EØ,11,6Ø,BD,EØ,1
1,C9,E8,FØ,Ø3,FE,EØ,11,6Ø,E
E,94,16,AD,94,16         :REM*171
122 DATA FØ,Ø1,6Ø,A9,FE,8D,94,1
6,EE,95,16,AD,95,16,C9,4Ø,D
Ø,Ø5,A9,3D,8D,95         :REM*2Ø8
123 DATA 16,8D,FF,Ø7,8D,FE,Ø7,8
D,FD,Ø7,A2,ØØ,BD,ØØ,38,29,Ø
7,ØA,ØA,ØA,EA,8D         :REM*18
124 DATA F7,16,2Ø,2Ø,17,E8,E8,E
Ø,Ø6,DØ,EB,6Ø,2Ø,96,16,4C,9
6,16,Ø1,ØØ,2Ø,96         :REM*247
125 DATA 16,4C,B7,16,EA,EA,2Ø,B
7,16,4C,B7,16,EA,EA,2Ø,B7,1
6,4C,A1,16,EA,EA         :REM*146
126 DATA 2Ø,A1,16,4C,A1,16,EA,E
A,2Ø,A1,16,4C,AC,16,EA,EA,2
Ø,AC,16,4C,AC,16         :REM*55
127 DATA EA,EA,2Ø,96,16,4C,AC,1
6,FF,EA,78,A9,17,8D,15,Ø3,A
9,4D,8D,14,Ø3,58         :REM*2Ø8
128 DATA 6Ø,2Ø,ØØ,18,4C,65,FA,A
Ø,ØØ,8C,Ø6,17,8C,Ø7,17,B9,Ø
Ø,1A,8D,6B,17,B9         :REM*84
129 DATA Ø1,1A,8D,6A,17,A2,ØØ,B
D,72,Ø7,C9,D1,DØ,Ø8,EE,Ø6,1
7,DØ,Ø3,EE,Ø7,17         :REM*119
13Ø DATA E8,EØ,19,DØ,EC,C8,C8,C
Ø,2Ø,DØ,D8,6Ø,AØ,Ø8,A2,ØØ,F
E,D6,11,E8,E8,EØ         :REM*165
131 DATA ØA,DØ,F7,88,DØ,F2,EA,E
A,EA,6Ø,AØ,Ø8,A2,ØØ,DE,D6,1
1,E8,E8,EØ,ØA,DØ         :REM*231
132 DATA F7,88,DØ,F2,EA,EA,EA,6
Ø,AØ,Ø8,A2,ØØ,FE,D7,11,E8,E
8,EØ,ØA,DØ,F7,88         :REM*38
133 DATA DØ,F2,EA,EA,EA,6Ø,AØ,Ø
8,A2,ØØ,DE,D7,11,E8,E8,EØ,Ø
A,DØ,F7,88,DØ,F2         :REM*1Ø6
134 DATA EA,EA,EA,6Ø,2Ø,84,17,4
C,CØ,17,2Ø,84,17,4C,AC,17,2
Ø,98,17,4C,AC,17         :REM*219
135 DATA 2Ø,98,17,4C,CØ,17,A2,1
9,A9,2Ø,9D,19,Ø5,CA,DØ,F8,A
D,FC,19,6Ø,Ø1,FF         :REM*94
136 DATA ØØ,FF,ØØ,8E,AD,FA,17,F
Ø,ØA,AD,1E,DØ,29,1F,FØ,Ø3,8
D,FF,19,2Ø,C2,16         :REM*1Ø8
137 DATA 6Ø,FF,ØØ,AØ,ØØ,B9,2Ø,1
A,8D,29,18,B9,21,1A,8D,28,1
8,A2,ØØ,A5,FE,9D         :REM*97
138 DATA 72,DB,E8,EØ,19,DØ,F6,C
8,C8,CØ,2Ø,DØ,E2,6Ø,AØ,ØØ,B
9,2Ø,1A,8D,52,18         :REM*211
139 DATA B9,21,1A,8D,51,18,A2,Ø
Ø,EE,FF,1A,AD,FF,1A,29,ØF,F
Ø,F6,9D,72,DB,E8         :REM*1Ø1
14Ø DATA EØ,19,DØ,EE,C8,C8,CØ,2
Ø,DØ,DA,6Ø,FF,AØ,ØØ,B9,2Ø,1
A,8D,74,18,B9,21         :REM*24Ø
141 DATA 1A,8D,73,18,A2,ØØ,A5,F
E,9D,72,DB,E8,EØ,19,DØ,F6,C
8,C8,CØ,2Ø,DØ,E2         :REM*218
142 DATA 6Ø,E6,FE,A5,FE,29,ØF,F
Ø,F8,85,FE,4C,6Ø,18,A2,ØØ,A
9,ØØ,9D,ØØ,ØB,E8         :REM*183
143 DATA EØ,1Ø,DØ,F6,A2,Ø5,AD,Ø
6,DC,29,ØF,C9,Ø3,FØ,F7,C9,Ø
7,FØ,F3,C9,ØA,1Ø         :REM*Ø
144 DATA EF,A8,B9,ØØ,ØB,DØ,E9,A
9,Ø1,99,ØØ,ØB,CA,DØ,E1,4C,1
9,14,A2,ØØ,A9,ØØ         :REM*24Ø
145 DATA 9D,ØØ,ØB,E8,EØ,1Ø,DØ,F
6,A2,Ø5,AD,Ø6,DC,29,ØF,C9,Ø
5,FØ,F7,C9,Ø6,FØ         :REM*221
146 DATA F3,C9,Ø9,FØ,EF,C9,ØA,F
Ø,EB,A8,B9,ØØ,ØB,DØ,E5,A9,Ø
1,99,ØØ,ØB,CA,DØ         :REM*1Ø4
147 DATA DD,4C,19,14,ØØ :REM*68
148 DATA Ø,4,8,12,13,1,4,5,6,9,
Ø,4,8,12,5,Ø,1,5,6,9,Ø,1,5,
9,1Ø,Ø,1,2,5,9,Ø,1,5:REM*95
149 DATA 9,8,1,2,5,6,9,Ø,4,8,12
,9,Ø,4,8,12,1,5,6,8,9,1Ø,1,
5,6,1Ø,11,Ø,1,2,6,1Ø
                         :REM*113
15Ø DATA 1,2,4,5,9,1,2,5,6,1Ø,2
,6,1Ø,14,9,31,5418,Ø,63,541
8,1,127,5418,2,255 :REM*174
151 DATA 5418,3,31,6286,Ø,63,62
86,1,127,6286,2,255,6286,3,
31,6334,Ø,63,6334  :REM*248
152 DATA 1,127,6334,2,255,6334,
3,255,5744,Ø,127,5744,1,127
,5744,2,255,5744,3 :REM*238
```

■

SAVE SOME

At SDA you're alway

"Shamrock

We have wha

On a Budget?

See Our Under $10 Bargain Basement.

ACCOLADE
Ace of Aces $9.88
Apollo 18 ..... $9.88
Bubble Ghost $9.88
4th & Inches Football .. $9.88
4th & Inches Team Const. $6.88
Hardball $9.88
Test Drive 1 ..... $9.88

ACTIVISION
Apache Strike $9.88
Die Hard $9.88
Last Ninja #1 ..... $9.88
Predator $9.88

ADVANTAGE
Frightmare $9.88
Harrier 7 ..... $9.88
Mental Blocks $9.88
Shoot'em Up Const. Set $9.88

AEC FUN LEARNING
Life Science $5.88
U.S. Geography $5.88
U.S. Government $5.88
U.S. History 1 or 2 .. $5.88 Ea.
Vocabulary Builder $5.88

BOX OFFICE
Alf $9.88

BRODERBUND
Choplifter/Davids Midnight Magic $6.88
Magnetron $9.88
Superbike Challenge .. $6.88

CAPCOM
Bionic Commando $7.88
Forgotten Worlds $9.88
Last Duel $9.88
Pocket Rockets $9.88
Street Fighter $9.88

CINEMAWARE CLASSICS
Sinbad $9.88

COSMI
Swift Data Base $6.88
Swift Desktop Publisher .. $6.88
Swift Music $6.88
Swift Paint $6.88
Swift Spreadsheet $6.88
Swift Word Processor .. $6.88

DATA EAST
Ikari Warrior $9.88
Platoon $9.88

EASY WORKING/ SPINNAKER
Filer $6.88
Planner $6.88
Writer $6.88

ELECTRONIC ARTS
Demon Stalkers $9.88
Financial Cookbook ... $7.88
Legacy of Ancients $9.88
Marble Madness $9.88
Modem Wars $9.88
Music Const. Set $9.88
Pegasus $9.88
Powerplay Hockey $9.88
Realm of Impossibility .. $7.88
Skate or Die $9.88
Strike Fleet $9.88
Wasteland $9.88
World Tour Golf $9.88

EPYX
Boulderdash Const. Kit .. $9.88
Jet Combat Simulator .. $9.88
Space Station Oblivion .. $9.88
Spy vs. Spy 3 ..... $9.88
Temple Apshai Trilogy .. $9.88
Winter Games $9.88
World Karate Champ .. $6.88

GAMESTAR
Champ. Baseball $9.88
GFL Ch. Football $9.88
Take Down $9.88

GAMETEK
Candy Land $9.88
Chutes & Ladders $9.88
Double Dare $9.88
Go To Head of Class .. $9.88
Hollywood Squares $9.88
Press Your Luck $9.88
Super Password $9.88

HI-TECH EXPRESSIONS
Fun House $9.88
Looney Tunes Print Kit .. $9.88
Muppet Adventure $9.88
Print Power $9.88
Remote Control $8.88
Win, Lose or Draw $8.88
Win, Lose or Draw 2 ... $8.88
Win, Lose or Draw Jr. .. $8.88

HI-TECH EXPRESSIONS
Sesame Street Series
Astro Grover $6.88
Big Bird's Special Delivery $6.88
Ernie's Big Splash $6.88
Ernie's Magic Shapes .. $6.88
Grover's Animal Adv .. $6.88
Pals Around Town .. $6.88
Sesame St. Print Kit .. $9.88

INFOCOM
Hitchhikers Guide $9.88
Leather Goddesses $9.88
Zork 1 ..... $9.88

INTRACORP
Business Card Maker .. $9.88

MASTERONIC
Double Dragon 1 ..... $9.88
Last V-8 ..... $4.88
Ninja $4.88
Slam Dunk $6.88
Vegas Poker & Jackpot . $4.88

MELBOURNE HOUSE
John Elway's Q-Back .. $9.88
Magic Johnson's B-Ball . $9.88

SHARE DATA
All New Family Feud ... $8.88
Avoid The Noid $9.88
Concentration $9.88
Concentration 2 ..... $9.88
Wipe Out $9.88

SPECTRUM HOLOBYTE
Gato $9.88

SPINNAKER
Learn the Alphabet $4.88
Learn to Spell $4.88
Learn to Add $4.88

SPRINGBOARD
Certificate Maker $9.88
C.M. Library Vol. 1 .... $9.88
Newsroom $9.88
N.R. Art #1, 2, or 3 . $9.88 Ea.

TAITO
Arkanoid $9.88
Bubble Bobble $9.88
Renegade $9.88

THUNDER MOUNTAIN
Galaxian $8.88
Rambo: 1st Blood Part 2 $9.88
Super Pac Man $9.88

VALUE WARE
Artist $4.88
Educator $4.88
Entertainer $4.88
Home Banker $4.88

!!! SDA CLOSEOUTS !!!

Honeymooners $16.16
Sea Speller $2.22
WICO Redball Joystk .. $17.17
Heart of Africa $3.33
Electronic Address Book $4.44
Financial Cookbook $6.66
EPYX 200 XJ Joystick .. $6.66
SPINKR-Read 1 age 7-12 $9.99
Master of Magic $3.33
Mastertronic-Feud $4.44
CBS Argos Expedition .. $3.33
CBS Math Mileage $3.33
Rainbird Starglider ... $13.13
Shogun-Mastertronic .. $4.44
Realm of Impossibility .. $7.77
Jet Boys $6.66
CBS Timebound $3.33
Worlds Greatest Baseball $6.66
Bus-Calc 3 Spreadsheet $7.77
SEGA-Congo Bongo .. $3.33
E.A. Amer. Cup Sailing $6.66
Alien Destruction Set .. $7.77
Unicorn-Jumble Jet .. $11.11
Rainbird Corruption .. $21.21
Silman's Chess Opening $15.15
Mastertronic-Ten Speed $4.44
CBS Grover's Adv. $3.33
Boston Computer Diet .. $8.88
Mastertype Cart $8.88
Phantom of the Asteroids $2.22
Treasure Island $6.66
*Quantities Limited

ABACUS BOOKS
Anatomy of the 1541 ..... $14
Anatomy of the C64 ..... $14
GEOS Inside & Out $13
GEOS Tricks & Tips $13

ABACUS SOFTWARE
Basic $25
Basic 128 ..... $39
*Becker Basic $33
Cad Pak $25
Cad Pak 128 ..... $39
Chartpack 64 or 128 .. $25 Ea.
Cobol 64 or 128 ..... $25 Ea.
PPM $25
PPM 128 ..... $39
Super C64 or 128 ... $39 Ea.
Super Pascal 64 or 128 ..... $39 Ea.
TAS 128 ..... $39
*Requires GEOS!

ACCESS
Echelon w/Lip Stik $29
Heavy Metal $25
Mean Streets $25
Tenth Frame $25
World Class L. B. Golf ... $25
World Class L. B. Golf Fam. Course 1, 2 or 3 ... $14. Ea.

ACCOLADE
Blue Angels Flight Sim ... $19
Bubble Ghost $19
Fast Break $19
Grand Prix Circuit $19
Heat Wave Boat Racing .. $19
Jack Nicklaus Golf $23
J.N. Glf. Chmp. Courses $9.88
J.N. Glf. Int'l Courses .. $9.88
Rack 'Em $19
Steel Thunder $19
Strike Aces ..... Call
Test Drive 2: The Duel ... $23
T.D. 2: Europe Scenery . $9.88
T.D. 2: Muscle Cars ... $9.88
T.D. 2: Calif. Scenery .. $9.88
T.D. 2: Super Cars $9.88

ACTIVISION
Battlechess $25
Beyond Dark Castle $19
Crossbow $19
Dragon Wars $29
F14 Tomcat $25
F18 Hornet $23
Ghostbusters 2 ..... $19
Last Ninja 2 ..... $23
Neuromancer $25
Power Drift ..... Call
Rampage $23

AMERICAN EDUCATIONAL
Biology $12
Learn to Read (Gr. 1-4) .. $25
Science Grades 3/4 ..... $12
Science Grades 5/6 ..... $12
Science Grades 7/8 ..... $12
US Geography $12
US History $12
World Geography $12
World History $12

ARTWORX
Bridge 5.0 ..... $19
Daily Double Horse Race . $14
Kaleidokubes $14
Linkword Languages . $16 Ea.
Sim City $19

CENTRAL POINT
Copy 2 ..... $25

CINEMAWARE
Defender of the Crown ... $23
Rocket Ranger $23
The Three Stooges $23
T.V. Sports Football $19
Warp Speed (Cart) $33

CMS
General Accountant 64 or 128 ..... $119 Ea.
Inventory 128 ..... $49
S. P. Data Male #2 ..... $14
S. P. Data Female #1 or 3 . $14
Strip Poker $21

AVALON HILL - *ON SALE!*
Super Sunday $19.88
SBS 1987 Team Disk .. $9.99

BATTERIES INCLUDED
Paperclip Publisher $33
Paperclip 3 ..... $33

BAUDVILLE
Award Maker Libraries .. Call
Award Maker Plus $25

BERKELEY SOFTWORKS
Geos 128 2.0 ..... $44

ACTIVISION.

Overpower the terrorist thieves & rescue your wife from a L.A. skyscraper. All the tension & excitement of the blockbuster movie.

DIE HARD
List $14.95

SDA Discount Price $9.88

Geo-Calc 128 ..... $44
Geo-File 128 ..... $44
Geos 64 (2.0) $39
*Desk Pack Plus $19
*Font Pak Plus $19
*Geo-Chart $19
*Geo-Calc $33
*Geo-File $33
*Geo-Programmer $44
*Geo-Publish $33
*Requires Geos 64!

BLUE LION - *ON SALE!*
Ticket to Hollywood .. $16.88
Ticket to London $16.88
Ticket to Paris $16.88
Ticket to Spain $16.88
Ticket to Wash. D.C. ... $19.88

BRITANNICA
Eye of Horus $25

COSMI
Chomp! $16
Home Office $25
Navy Seal $19
Presumed Guilty! $16
Super Huey 2 ..... $14

DATA EAST
ABC Monday Nite Football $25
Bad Dudes $19
Batman $16
Batman The Movie $19
Heavy Barrel ..... Call
RoboCop $23
Speed Buggy $19
Super Hang-on $19
Untouchables ..... Call
Vigilante $16

DATA EAST

Those guttersnipes are wreaking havoc on your home turf. As Vigilante you must take power into your own hands & stop those Manical Mohawks.

VIGILANTE
List $24.95

SDA Discount Price $16

BRODERBUND
Bank St. Writer $33
Carmen S.D. - Europe ... $25
Carmen S.D. - U.S.A. $25
Carmen S.D. - World $23
Curse of Babylon $16
Downhill Challenge $14
License to Kill $14
Omni-Play Basketball $23
Omni-Play Horse Race ... $23
Print Shop $26
P.S. Companion $23
P.S. Graphics Library #1, 2 or 3 ..... $16 Ea.
P.S. Graphics Library Holiday Edition $16

DATA SOFT
Bismarck $19
Hunt for Red October $26

DAVIDSON
Algeblaster $19
Math Blaster $19
Spell It $19
Word Attack $19

DESIGNWARE
Body Transparent $19
Designasaurus $19

DIGITEK
Hole in One Min. Golf $19
Hollywood Poker $19
Western Games $19

*Please Read The Following Ordering Terms & Conditions Carefully Before Placing Your Order: Orders with cashiers check or money order shipped immediately on in-stock items! Personal & Company checks, allow 3 weeks clearance. No C.O.D.'s! Shipping: Continental U.S.A.-Orders under $100 add $3; free shipping on orders over $100. AK, HI, FPO, APO-add $5 on all orders. Canada & Puerto Rico add $7.50 on all orders. Sorry, no other international orders accepted! PA residents add 6% sales tax on the total amount of order including shipping charges. CUSTOMER SERVICE HOURS: Mon.-Fri. 9 AM-5:30 PM Eastern Time. REASONS FOR CALLING CUSTOMER SERVICE—412-361-5291 (1) Status of order or back order (2) if any merchandise purchased within 60 days from SD of A is defective, please call for a return authorization number. We will not process a return without a return auth. #! Defective merchandise will be replaced with the same merchandise only. Other returns subject to a 20% restocking charge! After 60 days from your purchase date, please refer to the warranty included with the product purchased & return directly to the manufacturer. Customer service will not accept collect calls or calls on SD of A's. 800 # order lines! Prices & availability are subject to change! New titles are arriving daily! Please call for more information.

GREEN CELEBRATION

"Dublin" your savings because our prices are bottom and that's no blarney. you're looking for!

Broderbund

Stock up on arms, magic & fireballs to save the world of Babylon from zombies, rock creatures, giant blue lizards & more.

CURSE OF BABYLON
List $24.95
SDA Discount Price $16

ELECTRONIC ARTS

Scream thru turns & rockets down straightaways on 16 course around the world against 7 of the hottest drivers of the Grand Prix circuit.

FERRARI FORMULA 1
List $39.95
Call For Price & Availability

ULTRA

From the Saturday morning cartoons come the heroes in a half shell. Grab your nunchukus & hit the villainous streets or you'll get turned into turtle soup.

TEENAGE MUTANT NINJA TURTLES
List $29.95
SDA Discount Price $19

subLOGIC

We offer the full line of Scenery Disks including the new Hawaiian Odyssey adventure. Expand the flying environment of your flight sim. programs.

HAWAIIAN ODYSSEY
List $29.95
SDA Discount Price $19

Games

A collosal collection of European software hits. 10 titles for the price of 1. More fun, action & excitement than you can handle at one time.

MEGA PACK
List $34.95
SDA Discount Price $23

ELECTRONIC ARTS
Altered Beast $23
Bard's Hints 1, 2 or 3 $9.95 Ea.
Bard's Tale 2 ..... $17
Bard's Tale 3 ..... $26
Beyond the Black Hole ... $21
Caveman Ugh-Lympics ... $21
Chessmaster 2100 ..... $26
Chuck Yeagers AFT ... $9.88
Double Dragon $23
Dragon's Lair $19
Empire $26
F-16 Combat Pilot ..... Call
Ferrari Formula 1 ..... Call
Fire King $21
Indiana Jones Last Crusade Arcade Version $21
Iron Lord $26
Kings Beach Volleyball ... $21
Madden Football $26
Maniac Mansion $23
Mavis Beacon Tyrng $26
Might & Magic 1 ..... $17
Might & Magic 2 ..... $26
Panzer Battles $23
Pipe Dream $21
Pro Tennis Tour ..... Call
Project Firestart $21
Sentinel Worlds $23
Skate Wars ..... Call
Starflight ..... Call
Star Fleet 1 ..... $26
Turbo Out Run ..... Call
Zak McKracken $23

EPYX
Devon Aire $19.88
Fast Load Cart $24
Metrocross $12.88
Mind-Roll $14.88
Revenge of Defender .. $9.88
Snow Strike $14.88
Sports-A-Roni $17.88

GAMESTAR
Face Off Hockey $19

HI-TECH EXPRESSIONS
Win, Lose or Draw Deluxe $16

INFOCOM
Battletech $25

INKWELL SYSTEMS
#170C Deluxe L.P. $69
#184C Light Pen $44
Flexidraw 5.5 ..... $23
Graphics Galleria #1 ..... $19
Graphics Galleria #2 ..... $19
Graphics Integrator 2 ..... $19

INTRACORP
Bumper Sticker Maker ... $33
Search For The Titanic ... $19
Security Alert ..... Call
Superman $19
Ultimate Casino Gambling $23

KONAMI/ULTRA
Teenage Mutant Ninja Turtles $19

LEARNING COMPANY
Moptown Parade $25
Reader Rabbit $25

LEISURE GENIUS
Clue $19
Monopoly $19
Risk $19
Scrabble $19
Scrupples $19

LOGICAL DESIGN
Club Backgammon $19
Vegas Craps $19
Vegas Gambler $19

MEDALIST/MICROPLAY
3-D Pool $19
Dr. Doom's Revenge $23
Pro Soccer $23
Pure Stat College B-Ball .. $25
Stunt Track Racer $19
X-Men $23

MELBOURNE HOUSE
Barbarian $19
Hershiser's Strike Zone ... $19
Magic Johnson B-Ball ... $19
Obliterator ..... Call

War in Middle Earth $25
World Trophy Soccer $19

MICROILLUSIONS
Blackjack Academy $25
Faery Tale Adventure $29
Sky Travel $32

MICROLEAGUE
Baseball w/GM + Box St... $25
B-Ball 88 or 89 Team Disk $14 Ea.
WWF Wrestling $19

MICROPROSE
Airborne Ranger $25
F-15 Strike Eagle $14
F-19 Stealth Fighter $29
Gunship $25
Pirates $29
Red Storm Rising $29
Silent Service $14

MINDSCAPE
Action Fighter $19
Afterburner $23
Alien Syndrome $23
Aussie Games $19
Clubhouse Sports $19
Crossword Magic $19
De Ja Vu $23
Gauntlet 2 ..... $19
Hostage $19
Indoor Sports $19
Int'l. Team Sports $19
Out Run $23
Sgt. Slaughters Mat Wars . $19
Shinobi $19
Sports Mega Hits $25
Thunder Blade $23
Uninvited $23

MISC UTILITIES
Bob's Term Pro $29
Bob's Term Pro 128 ..... $39
Doodle $25
Final Cartridge 3 ..... $47
Font Master 128 ..... $29
Maverick Utilities V.3 ..... $23
Superbase 64 ..... $25
Superbase 128 ..... $33
Superscript 64 ..... $23
Superscript 128 ..... $25
Super Snapshot (V.5) $47

ORIGIN
Autoduel $25
Bad Blood ..... Call
Knights of Legend $33
Moebius $25
Omega $33
Quest For Clues Bk. 2 ... $19
Space Rogue $33
Tangled Tales $19
Times of Lore $25
Ultima 4 or 5 ..... $39 Ea.
Ultima 5 Hint Book $9
Ultima Trilogy $39
Windwalker $25
Wizardry Trilogy $32

POLARWARE
All Dogs go to Heaven ... $19

PROFESSIONAL
Fleet System 2 Plus $33
Fleet System 4 128 ..... $43

PSYGNOSIS - *ON SALE!*
Ballistix $16.88
Captain Fizz $16.88

SHARE DATA
Nightmare on Elm Street . $19

SIMON & SCHUSTER
Star Trek: Rebel $23
Typing Tutor 4 ..... $25

SIR TECH
Heart of Maelstrom $25

SOFT-BYTE
Lotto Program $19

SPECTRUM HOLOBYTE
Tetris $16

SPOTLIGHT
Dark Side $21
Death Bringer $21
Speedball $21
Total Eclipse $21

SSI
*Hintbooks Available .... Call
Battles of Napoleon $32
Champions of Krynn $26
Curse of Azure Bonds ... $26
D. M. Mast. Asst. 1 or 2 ..... $21 Ea.
Demon's Winter $21
First Over Germany $32
Gettysburg $39
Hillstar $26
Heroes of the Lance $21
Overrun $32
Pool of Radiance $26
Storm Across Europe $39
Typhoon of Steel $32
War of the Lance $26

SPINNAKER
Complete SAT $25
EZ Working Tri-Pack $14
BW Turbo Load & Save .. $16

SUBLOGIC
Flight Simulator 2 ..... $32
F.S. Scenery Disks ..... Call
Hawaii Scenery $19
Jet $26
Stealth Mission $32
Up Periscope $19

TAITO
Arkanoid 2: Revenge $19
Chase H.Q. ..... Call
New Zealand Story ..... Call
Ninja Warriors ..... Call
Operation Thunderbolt .. Call
Operation Wolf $19
Puzznic ..... Call
Qix $19
Rambo 3 ..... $19
Sky Shark $19

THUNDER MOUNTAIN
Action Pack Vol. 1 or 2 $14 Ea.

THREE SIXTY
Dark Castle $23
Thud Ridge $23
Warlock $19

TIMEWORKS
Data Manager 2 ..... $14
Evelyn Wood Reader $14
Swiftcalc/Sideways $14
Word Writer 4 ..... $25

UNICORN
Decimal Dungeon $19
Ten Little Robots $19

UNISON WORLD
P.M. Art Gallery 1 + 2 .... $19
P.M. Art Gallery: Fantasy . $16
Print Master Plus $23

VIRGIN GAMES
Double Dragon 2 ..... $23

WEEKLY READER
Stickybear Series:
ABC's $14
Math 1 or 2 ..... $14 Ea.
Numbers $14
Opposites $14
Reading $14
Reading Comprehen.... $16
Shapes $14
Spellgrabber $16
Town Builder $16
Typing $16

ACCESSORIES
Animation Station $49
CompuServe Starter Kit .. $19
Bonus 5¼ DSDD ... $4.99 Bx.
Freedom Cordless Joystick $44
Sony 5¼ DSDD .... $6.99 Bx.
Disk Case (Holds 75) .. $6.88
Disk Drive Cleaner $4.88
IController $14
Winner M3 Analogue Mouse $33
EPYX 500 XJ Joystick $14
Wico Bat Handle Joystick . $17
Wico Boss Joystick $12
Wico Ergostick Joystick .. $16
XETEC Super Graphix ... $59
XETEC Super Graphix Jr.. $39
XETEC Super Graphix Gold $79

CLIP & SAVE • CLIP & SAVE

$2.50 OFF
ON MAILED-IN ORDERS* OVER $50
*Check / Money Order / MC/VISA sent to our P.O. Box Address
EXPIRES 4-30-90

SDA • SDA • SDA • SDA • SDA • SDA • SDA • SDA • SDA • SDA

CLIP & SAVE • CLIP & SAVE

Speedy Delivery
Deep Discounts
Astronomical Selections
If you can't find what you're looking for in our ad, call us.

Ask your Salesperson what's on sale this month!

USA/CANADA orders
1-800-225-7638
PA Orders 1-800-223-7784
Customer Service (412) 361-5291
Fax Order Line (412) 361-4545

- Free shipping on orders over $100 in continental USA.
- No surcharge for VISA/MasterCard.
- Your card is not charged until we ship.
- School purchase orders accepted.

Send check or money orders to:
P.O. 111327-Dept. RN
Blawnox, PA 15238

Software Discounters Of America

Order Line Hours: Mon.-Thurs. 9:00 AM-9:00 PM, Fri. 9:00 AM-7:00 PM, Sat. 10:00 AM-4:00 PM Eastern Time
MODEM OWNERS: You can order on-line from our Commodore Shop via the CompuServe, GEnie and Q-Link electronics malls.

GOLD MINE

Get the edge on your opponents by mastering these game tips.

By LOUIS F. SANDER

ARKANOID: When leaving a level, write down the exit you used. Usually there's one hard board and one easy board for each level, so you should know the easy one.

—DAVID SHEELY
ADDRESS UNKNOWN

BATMAN: In the Joker game, put on the Gas Mask when you enter the sewers and bring the Flashlight.

In one tent, you'll find slot machines that can pay off nicely. Get money from another tent. Keep playing the machines until you hit the jackpot.

—R. C. MILLER
BERWICK, PA

BATTLETECH: House Kurita (the Draconis Combine) will attack the Citadel by your sixth training mission. You should have built up your skills by then, because you won't have another opportunity. Apply for apprenticeship at the Mechit Lube.

The map room is confusing. When you come to it, touch the planets Pesht, Benjamin, Skye, Summer, Ryerson, Kathil and Achernar to turn them into squares. Then touch the computer on the wall. Go to the Hyperpulse Generator, contact Katrina and win.

—STEVE CAVE
MEDFORD, OR

CAVEMAN UGH-LYMPICS: In the Firemaking event, start by hitting your opponent in the head. It'll give you a nice lead. As soon as you get smoke, take large breaths. You'll get the fire started quicker, and you won't get dizzy. In some events, you must jiggle the joystick as fast as you can. This is hazardous to your joystick, so use an old Atari or other inexpensive joystick.

—TODD SINCLAIR
SUISUN, CA

CURSE OF THE AZURE BONDS: This applies in Zhentil Keep: When you go upstairs in the Zhentil Inn, you'll find another exit to your room. Go through this door, and you'll be in a hall with different stores, including a Magic Shop. But beware! You won't be able to get out. If you want to enter any of the shops, do it from the front exit on the street.

In Yulash, when you enter the pit, follow the bread scent until you find Alias and Goldmoon, who'll help you kill Moander and his fanatics.

—STEVIE MELENDEZ
BAILEYTON, AL

DOUBLE DRAGON: This works in a two-player game: When you walk down the road, wait for an enemy to come out. If only one appears, let him follow you to the top of the screen, then jump up, and he will freeze. Now your partner can beat him up. Be sure to stay in the air, because if you approach the enemy, he'll thaw out and come after you. The secret is to let your partner do the dirty work.

—CONNIE MCCARTHY
FRIENDSHIP, OH

DOUBLE DRAGON II: THE REVENGE: To kill the small guards, press the firebutton and push your joystick forward so your man does jumping sidekicks. Press the button on and off repeatedly, making sure your man is standing over the guards. To kill the large guards, punch and kick continuously. These two methods will easily let you go from level one to level five.

—TIM FRITZSCHE
CHANDLER, AZ

GRAND PRIX CIRCUIT: Try each race car to see which you're most comfortable with. Beginners should try the Ferrari, since it's a "road hugger." The McLaren is best for speed and power.

Use the Practice feature on the tracks that are hardest for you.

The manual shift isn't as easy as in Test Drives I and II. When you're going over 200 mph and through all the turns, it's hard to shift properly. Beginners should start with auto shift.

—BEHZAD SEILSEPOUR
DALLAS, TX

HILLSFAR: Here's how to find Jared Jymn: Castle—Go to the gates and search. Rat's Nest Pub—Listen to gossip. Sewer—Look for the right chest. Arena—Defeat an enemy. Hermit's Place—Search for the right chest. Rat's Nest—Speak to the Barmaid. Haunted Mansion—Go to the northwest corner of the labyrinth, get all the treasure, then exit. Bugbear's Cave Pub—Speak to the Barmaid. Trading Post—Talk to the Trader. Fighters' Guild—Talk to the Guild Master; he'll give you $10,000 and lots of experience.

—CONTRIBUTOR UNKNOWN
DOBBS FERRY, NY

IMPOSSIBLE MISSION II: When you lay a bomb down, don't put it near anything you want to search. An explosion makes the ground disappear, and you won't be able to read your search.

—T. STUDS
KINCARDINE, ONTARIO, CANADA

MONOPOLY: Buy one property from each set. Then trade properties from sets you don't want for the one or two you need. Keep one property from the sets your opponents need. When you have one or two complete sets, just collect from the others when they land on your properties. You'll only pay single rents to your opponents. This strategy is easier to use playing solo against the computer.

—CHRIS WAHL
BOYCE, VA

TEST DRIVE II: THE DUEL: Choose the Ferrari F40. It has faster acceleration.

Just before entering the first tunnel on Level 4, the radar detector will beep. Slow down until you're inside. The ra-

dar detector will then beep again. Now accelerate. You're out of radar range when you exit the tunnel.

—Robert Danzer
Address unknown

Sim City: To increase your city's funds, turn off your monitor and disk drive and leave the computer on for several hours. Your funds will then be at least $64,000!

—Roseanne Carr
Sims, CA

Times of Lore: Making a map of this game helped me solve it in under two hours.

Find the urn carrying the foretelling stones by killing a certain orc at the orc camp. Find the ring by killing the giant, east of Rhyder.

The Tablet of Truth is on the first floor of Heidric's castle. Buy the magical ax from a serf in Lankwell and the magical boots from a serf in Treela.

The Black Asp can give you the confession of the assassin. To find a note, kill the guard who runs around at night outside Heidric's castle. In a castle northeast of Hampton, you can find a key by killing the first guard. The same building contains a green scroll on a table.

Buy the holy water from Friar Kaine in Rhyder. After you kill the Lyche, return to Irial; he'll give you another key to get into the caves. The chimes at the end of a tough maze in the caves can get you into Grey Abbot's castle. Go to the second floor and take the invisible sphere from the bed. Kill the Grey Abbot with it, then pick up the medallion to win the game.

—Erik Haslam
South Milwaukee, WI

Wasteland: Here are some tips for making a party: Make a leader-type character with high perception, high rifle, high assault rifle, medic, silent movement, swim, climb, clip pistol and confidence. When the game begins, go to Quartz, sell his pistol and ammo, and buy him an M17 carbine with 10–15 7.62mm clips.

Make a big, strong character with high brawling, pugilism, high clip pistol, assault rifle and an AT weapon; make a thief-type character with high perception, high gamble, sleight of hand, acrobat, picklock, silent movement, confidence, alarm disarm, safecrack, clip pistol and assault rifle; make a doctor character with high medic, high clip pistol, rifle, assault rifle and forgery.

As soon as possible, go to the black market in Darwin. Sell the leader's M17 and buy an M1989A1 NATO assault rifle, which holds more bullets than an AK97. When everybody has an M1989A1, get the leader an AK97, which is slightly more accurate.

To get money, first make one character that you'll keep, plus three dummy characters. Go to Quartz and sell all the items from the dummy characters. Return to Ranger Center, give the money to the good character, then delete the three dummies. If you manage to do this often, you'll make about $700 each time.

—Will Rodina
Jupiter, FL

Where in [Wherever] Is Carmen Sandiego?: This works with all Carmen Sandiego games. When you start your investigation and the screen reads, "No one like that has been seen around here," stop the investigation, return to the city you just left, and try another city. This saves you four hours, because if Carmen or one of her gang is not at the first place you investigate, they won't be and will not have been at the other two.

—Gregory Green
APO, NY

Who Framed Roger Rabbit?: Keep the car behind you from passing, because he serves as your friend when you try to jump over the slime.

—Alvin Mah
Maple Ridge, B.C., Canada ■

Send your C-64/C-128 game tips to Gold Mine, PO Box 101011, Pittsburgh, PA 15237. Put your name, address and Social Security number on every 8½-by-11 sheet of paper you send, and be sure to state which computer your tip is for. Neatness counts. If your tip is published, you'll get a $5 check from RUN.

To order a book of over 1200 Gold Mine tips on 500 games for Commodore computers, call TAB Books at 800-822-8158. (In Pennsylvania, call 717-794-2191). Ask for Book #3323.

ReRUN's Program Disk Order Form

Save yourself the time it takes to enter program listings from this issue of *RUN*. Order the bi-monthly ReRUN disk today!

Each ReRUN contains all program listings from two issues of *RUN*, plus unpublished bonus programs, and comes complete with documentation booklet. Just **$16.47**.

Call **1-800-343-0728**
or mail the coupon below.

YES! Please send me the (Mar/Apr '90) issue of ReRUN!

Name _____

Address _____

City, State, Zip _____

☐ Check Enclosed
☐ Charge my:
☐ American Express
☐ MasterCard
☐ Visa

Acct. # _____

Exp. _____

Signature _____

Bi-monthly disks are published in January (Jan/Feb issues of *RUN*), March (Mar/Apr), May (May/June), July (Jul/Aug), September (Sept/Oct) and November (Nov/Dec).

ReRUN
80 Elm Street
Peterborough, NH 03458

128 Mode

Discover the secrets of the Directory command's often unrealized capacities.

By MARK JORDAN

AMONG THE MOST POPULAR C-128 commands is Directory, which is so useful that it's even built into one of the function keys (F3). However, I fear many 128ers overlook some of the "directorial" power available to them.

The problem stems partly from the *C-128 System Guide*'s cryptic description of the command:

DIRECTORY (Ddrive number)(,<ON> Udevice)(,wild card)

The first two options—Ddrive number and ON—are useless for all practical purposes. Forget both of them.

The Udevice option lets you use Directory on a second (or third or fourth) drive, just by tacking U9, or the like, onto the end of the command, like so:

```
DIRECTORY U9
```

Don't put a comma before the U9 unless you're using a search string, as described below.

Selective Directories

DIRECTORY provides two ways to limit directory listings to what you want: with search strings and by file type. A search string is a specific string of characters used to identify the filename(s) you want listed. The string could be identical with one filename, say BOB. To list BOB alone, you'd type:

```
DIRECTORY "BOB"
```

If you're accessing a second drive, tack on ,U9 (note the preceding comma) after BOB.

Search strings really come into their own when used with the wild cards: the asterisk and the question mark. For instance, most Commodore users know that placing a mnemonic or symbolic prefix on filenames makes them easy to group using the asterisk wild card. You might place WRD. before the names of all word processing files. Then the command DIRECTORY "WRD.*" would list only word processing files.

This is old hat. But what if you want the mnemonic to be at the end of the filename, like CP/M and MS-DOS extensions? Placing it at the end makes the filenames easier to read. It would appear that DIRECTORY can't handle that with the asterisk (except when you're using the 1581). However, with the humble question mark wild card, it can. The key is in always using 16-character filenames, with the final characters constituting the suffix, or extension.

Let's say you're saving a letter to Sue. You could call it SUE_____.LTR, where the underline characters represent spaces that pad the filename proper to 12 characters (the added period and 3-letter suffix making 16). With files thus named, you could list them by extension as follows:

```
DIRECTORY "???????????.LTR"
```

You could also save yourself the bother of typing 12 question marks by assigning them to a variable, such as:

```
Q$="???????????"
```

Directory lets you use variable names for search strings in two ways: inside parentheses, as in:

```
DIRECTORY (Q$)
```

or added to another search string, as in:

```
DIRECTORY (Q$)+".LTR"
```

The second way you can get selective directory listings is by file type. To do so, you must add the expression =S (or P, R or U) after the search string. Thus, to list just sequential files, you'd type:

```
DIRECTORY "*=S"
```

Change the S to P, R or U and you'd list program, relative or user files, respectively.

Happily, these two methods of listing selective files can be combined. For example, DIRECTORY "PI*=S" will list only those sequential files whose names start with the letters PI.

Printing Directories

Unfortunately, you can't use the Directory command to print out a hard-copy of a directory. You must resort to the old C-64 method of loading the directory into memory (and thus erasing whatever is already there). At least it's simple:

```
LOAD "$",8
```

Then, to print it out, you must open a channel to the printer with:

```
OPEN 4,4,7:CMD 4:LIST:CLOSE 4
```

Wild-card search strings work here, as well. To load just those files with extension .LTR, type:

```
LOAD "$:???????????.LTR",8
```

And file-type matching works here, as well:

```
LOAD "$:*=S",8
```

Running Directories

The tricks I've described so far are all for the Immediate, or Direct, mode of operation. How about when a program is running?

Well, Directory does work within a program, but it's limited: It just scrolls the files by. To make it possible to select files from the listing, you must employ a few more tricks.

Listing 1 shows how to get all the files into an array. The key is to use a secondary address of 0 when opening the directory (see line 20). When run, this little program reads a directory and converts all the filenames into Basic subscripted variables—in this case FI$( ). FI$(0) holds the name of the disk, and FI$(1) through FI$(F) hold all the filenames. This is very useful whenever you write a program that needs to read directories for the user to cycle through.

Listing 2 provides another way. It uses the Directory command itself for selecting files from within a program. With the judicious use of the Window and Input commands, plus a couple of sneaky Pokes, you come out of this routine with FI$ holding the name of the file that was selected.

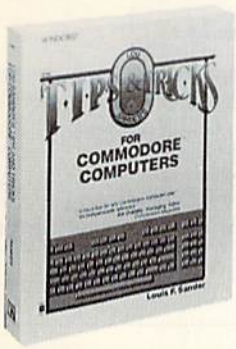
Both listings contain remarks that, ►

Get A Goldmine of Tips and Projects for Your Commodore

Build Up Your Game Strategies!

LOU SANDER'S GOLD MINE: Game Tips for Commodore™ Users by Lou Sander

Sharpen your game-playing skills with over 1200 tips on 500+ popular software games in this one handy volume! Master such favorites as "Breakthru," "Defender of the Crown," "GUNSHIP," "The Last Ninja," "Legacy of the Ancients," and more with these proven pointers. This rich assortment of winning formulas offers the best of Lou Sander's popular "Gold Mine" column, plus hundreds of tips never before published! 352 pp./illustrated. **No. 3323H, $28.95 Hardcover**



Stretch Your Commodore's Capabilities!

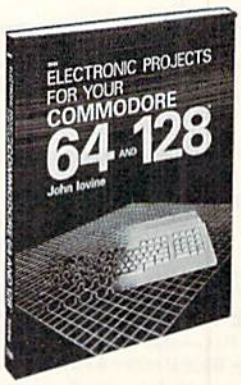
LOU SANDER'S TIPS AND TRICKS FOR COMMODORE COMPUTERS by Louis F. Sander

". . . good reading and an indispensable reference tool."
—James Gracely, Managing Editor, *Commodore Magazine*

Enjoy EVEN MORE tips from Lou Sander, columnist of Commodore Magazine's "Tips and Tricks." Includes 500+ user-tested tips and ready-to-use programs—many never before in print! Get valuable programs to create an easy word processor, memory saver, search mechanism, mode guard, and more. Plus, you get answers to your questions on: setting up and operating the computer; improving programming skills; and maximizing disks, printers, monitors, keyboards, peripherals, and more. 412 pp./illustrated. **No. 3192P, $21.95 Paperback**

Do Amazing Things with Your Commodore—for Under $65!

ELECTRONIC PROJECTS FOR YOUR COMMODORE 64™ AND 128™ by John Iovine



Maximize the performance and value of your Commodore 64 or 128 with 11 useful, fun-filled electronics projects from Commodore Magazine's "Projects" columnist John Iovine! This step-by-step guide shows how you can make • A simple LED interface for the user port • Appliance controller • Full-featured digital camera • Speech synthesizer • and more. 187 pp./148 illus. **No. 3083P, $15.95 Paperback**

More Bestselling Books for the Commodore User

Advanced Commodore 128 Graphics and Sound Programming *by S. Krute.* 404 pp./72 illus. (#2630H, $21.95 Hardcover)

The Commodore Programmer's Challenge: 50 Challenging Problems to Test Your Programming Skills—with Solutions in BASIC™, Pascal® and C® *by S. Chen.* 218 pp./illustrated. (#2817P, $14.95 Paperback)

Commodore 128 BASIC: Programming Techniques *by M. Hardee.* 190 pp./120 illus. (#2732P, $12.95 Paperback)

Commodore 128 Data File Programming *by D. Miller.* 297 pp./illustrated. (#2805H, $21.95 Hardcover)

Serious Programming for the Commodore 64 *by H. Simpson.* 208 pp./124 illus. (#1821P, $12.95 Paperback)

1001 Things to Do with Your Commodore 128 *by M.R. Sawusch/D. Prochnow.* 206 pp./74 illus. (#2756P, $12.95 Paperback)

TAB BOOKS Inc.
Blue Ridge Summit, PA 17294-0840

TO ORDER CALL TOLL FREE 1-800-343-0728

Ask for the TAB BOOKS Operator

Or mail ad to: TAB BOOKS Inc., Blue Ridge Summit, PA 17294-0840.

YES, please send me the following book(s). Please Print

Book # _____ Title _____ $ _____

Book # _____ Title _____ $ _____

Shipping and Handling ($5 outside the U.S.A.) $ 3.00

(In PA, NY, and ME add applicable sales tax.) $ _____

TOTAL $ _____

☐ Check or money order enclosed made payable to TAB BOOKS Inc.

Charge my ☐ VISA ☐ MasterCard ☐ American Express

Acct. No. _____ Exp. _____

Signature _____

Name _____

Address _____

City _____

State/Zip _____

Prices subject to change. RM490

with a little study, should enable you to use the listings as subroutines in your own programs.

Getting directories on the C-128 is a delight, especially when you know some power moves. List on, O Directory. R

Mark Jordan, whose vocation is directing high school English classes, has been programming Commodore computers for many years.

Listing 1. To place a directory in an array. (Available on ReRun disk. See order card facing page 24.)

```
5 REM SELECTIVE C-128 DIRECTORI
  ES LISTING 1            :REM*19
1Ø DIM FI$(144):ZB=8      :REM*88
2Ø OPEN 2,8,Ø,"$:*"       :REM*164
3Ø REM "$:*=S" FOR SEQUENTIAL F
   ILES ONLY              :REM*4Ø
4Ø REM "$:*=P" FOR PROGRAM FILE
   S                      :REM*232
5Ø REM "$:*=R" FOR RELATIVE FIL
   ES                     :REM*2Ø8
6Ø REM PUT ANY LETTER(S) BETWEE
   N COLON AND * FOR SELECTIVE
   DIRECTORIES            :REM*79
7Ø :                      :REM*128
8Ø DO                     :REM*58
9Ø FORT=1TOZB:GET#2,A$:IF ST TH
   EN EXIT                :REM*99
1ØØ NEXT:ZB=16            :REM*131
11Ø FORT=1TO16:GET#2,A$:REM*139
12Ø IFA$<>CHR$(34)THEN FI$(F)=F
   I$(F)+A$               :REM*18
13Ø NEXT                  :REM*5
14Ø PRINTFI$(F):F=F+1     :REM*71
15Ø LOOP                  :REM*131
16Ø F=F-2                 :REM*196
17Ø DCLOSE                :REM*199
```

Listing 2. To use the Directory command within a program. (Available on ReRun disk. See order card facing page 24.)

```
5 REM SELECTIVE C-128 DIRECTORI
  ES LISTING 2            :REM*113
1Ø W=RWINDOW(2)/2:WINDOW W-14,1
   ,W+12,23,1             :REM*11Ø
2Ø PRINTCHR$(14)"{SHFT P}RESS {
   SHFT R}{SHFT U}{SHFT N}/{SHF
   T S}{SHFT T}{SHFT O}{SHFT P}
    TO HALT"              :REM*167
3Ø TRAP 4Ø:DIRECTORY      :REM*124
4Ø TRAP:CU$="{CTRL 9}---->{5 CR
   SR LFs}"               :REM*68
5Ø WINDOW W-14,3,W+9,22:PRINT C
   HR$(27)"M"CU$;         :REM*255
6Ø DO:GETKEYA$:IFA$=CHR$(13)THE
   N EXIT                 :REM*86
7Ø PRINT"{CTRL Ø}{5 SPACEs}":PR
   INTCU$;                :REM*153
8Ø LOOP                   :REM*61
9Ø POKE2Ø8,1:POKE842,13:REM*138
1ØØ PRINT"{CTRL Ø}{5 SPACEs}{2
    CRSR LFs}"CHR$(27)"L";
                          :REM*71
11Ø INPUT FI$             :REM*232
12Ø PRINT"{2 HOMEs}{SHFT CLR}{S
    HFT Y}OU SELECTED "FI$
                          :REM*13Ø
```

■

ATTENTION : UPGRADING to an IBM?
Then you need **BIG BLUE READER**
New C128 Version 3.1

Big Blue Reader transfers word processing, text, ASCII, and binary files between Commodore and IBM MS-DOS disks. ***1571 or 1581 Disk Drive is required. Does not work with 1541 drives.***
Fast and easy to use. Transfers MS-DOS files on 160K-360K 5.25" & 720K 3.5" disks; Including MS-DOS Sub-directories.
Big Blue Reader 128 supports: C-128 CP/M files, 17xx REU, 40 or 80 columns, and much, much more.
Big Blue Reader 64 available separately only **$29.95**
BBR 128 V3 upgrade available; Send original BBR disk and $18
BIG BLUE READER 128/64 only $44.95

New BIBLE SEARCH
***Fastest* Complete Bible on Disk!**

Complete Old and New Testament on ONLY seven disks; New Testament Version on only two disks. The Fastest word search available: Word(s) in text are found and displayed in seconds!
Includes C64 and C128 programs.
Please specify 1541, 1571 or 1581 disks.
Complete Old and New Testament (KJV or NIV) $69
Both KJV and NIV Complete Bible Search only $125
New Testament Version KJV $25 - NIV $30)
Both KJV and NIV New Testament Bible Search only $49

Order by check, money order, or COD. US Funds only.
Free shipping in US and Canada. No credit card orders.
Foreign orders add $5 ($10 for whole Bible prg)
CALL or WRITE for more information.
SOGWAP Software * Call:**(219)724-3900**
115 Bellmont Road; Decatur, Indiana 46733

FACTORY AUTHORIZED
COMMODORE REPAIR CENTER
1-800-772-7289
(312) 879-2888 IN ILLINOIS

C64 Repair (PCB ONLY)	42.95	C128D Repair	CALL
C128 Repair (PCB ONLY)	64.95	Amiga Repair	CALL
1541 Permanent Alignment	29.95	Printers	CALL
1541 Repair	79.95	Monitors	CALL
1571 Repair	79.95	Other Equipment	CALL

CALL BEFORE SHIPPING FOR AUTHORIZATION NUMBER
(Have Serial and Card Numbers ready)
PARTS AND LABOR INCLUDED
FREE RETURN SHIPPING
(APO, FPO, AIR ADD $10.00)
24-48 HR. TURNAROUND
(Subject to Parts Availability)
30 DAY WARRANTY ON ALL REPAIRS

COMMODORE PARTS
CALL (312) 879-2350

C-64 Power Supply	34.95*
C-128 Power Supply	59.95*
Other Parts	CALL

*(Plus $3.00 Shipping/Handling)

TEKTONICS PLUS, INC.
150 HOUSTON STREET
BATAVIA, IL 60510
VISA MasterCard

Circle 31 on Reader Service card.

The Best Prices & Service

GEOS & Mouse Combo Save Up To $40.55

GEOS & Mouse Combo. Get the most out of your C64 or C128 with GEOS and a mouse. Combine the great features of GEOS - a Mac-like user interface, a graphic word processor, and more - with the ideal input device - a high quality mouse.

To help you bring your Commodore into the graphics age, we're offering an additional $5.00 saving off our already low prices. You'll save up to $40.55 off retail pricing. To take advantage of the savings, just order one of the packages below:

GEOS 2.0, C64, Disk			
	Sug. Retail $59.95	**43922**	**$39.95**
M3 Mouse	Sug. Retail $49.50	**82704**	**$38.95**
$5.00 Discount		87208	**-$5.00**
	You Pay Only		**$73.90**
GEOS 128 2.0, C128, Disk			
	Sug. Retail $69.95	**68956**	**$44.95**
M3 Mouse	Sug. Retail $49.50	**82704**	**$38.95**
$5.00 Discount		87208	**-$5.00**
	You Pay Only		**$78.90**

Now For Amiga, Too!

2400 Baud C64/C128

$79.95

1200 Baud C64/C128

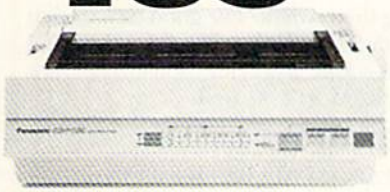
$59.95

Both the Minimodem-C and C24 are completely Hayes compatible (not just partially compatible like the 1670 and some Avatex models) **and** 1670 compatible. This means they'll work with ALL communications software for the 64, 64C, and 128. Key features include seven status indicators, Busy Detect, DTR signal support, High Speed Detect Line, and Auto Answer/Auto Dial. Includes Multiterm 64 and 128 software so you can start communicating right away, plus a free trial hour on CompuServe! Full-year warranty.

The Amiga versions of the Minimodems are equipped with a female connector to plug directly into the Amiga 500 or 2000. They need no external wall plug for power, and they use the Amiga's internal speaker for maximum fidelity.

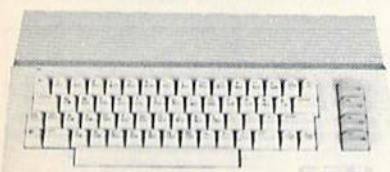
Minimodem-C24 (2400 Baud for C64/C128)	**88148**	**$79.95**
Minimodem-C (1200 Baud for C64/C128)	**81576**	**$59.95**
Minimodem-AM24 (2400 Baud for Amiga)	**88150**	**$79.95**
Minimodem-AM (1200 Baud for Amiga)	**88160**	**$64.95**

BLAZING 192cps $189.95



Disk Drive Includes FREE Software! $149.95

$129.95



Panasonic KX-P1180

Select over 11 functions on front panel. Four NLQ fonts and two draft fonts, each sized 5 to 20 char./in. Proportional spacing. Graphics 240x216 dpi. Draft at 192cps, NLQ at 38cps. Push or pull tractor feed. Two year warranty.

Panasonic KX-P1180 **82779** **$189.95**

FSD-2 Excelerator+

- Completely Commodore Compatible
- Faster, quieter, and more reliable
- Separate power supply eliminates overheating
- Full one year warranty
- FREE racing simulation game

While supplies last, we're bundling an exciting racing simulation game with each drive! To get your copy, order item No. 83262 with your disk drive. Sug. Retail $179.95

FSD-2 Excelerator+ **66166** **$149.95**

FREE 60 PAGE CATALOG

Thousands of products for your COMMODORE 64, 128 and AMIGA computers. CALL TODAY to receive your FREE copy!

Star NX-1000 II

$CALL

All the great features of the NX-1000 and more. Prints at 180 cps (draft mode, 12 cpi) and 45 in near letter quality. (150 cps draft and 38 cps NLQ at 10 cpi.) Parallel input port for direct cable connection to IBM or Amiga. To use with Commodore requires a parallel interface cable.

Star NX-1000 II	**86719**	**$CALL**
Black Ribbon	**75471**	**$5.95**

Commodore 64C

The complete computer for home, school and small business. Supported by high-quality peripherals and over 10,000 software programs. Full typewriter-style keyboard, 64K RAM, eight sprites, three voices.

64C Computer	**54574**	**$129.95**

Commodore Hardware

1670 Modem, 1200 Baud	**36952**	**$69.95**
1351 Mouse C64/C128	**37885**	**$32.95**
1802C Composite Monitor	**54595**	**$199.95**
1581 3.5" Disk Drive	**74023**	**$179.95**
1541 II Disk Drive	**54586**	**$CALL**
1764 RAM Expansion C64	**72513**	**$114.95**

TENEX Computer Express™

We gladly accept mail orders!

TENEX Computer Express
P.O. Box 6578
South Bend, IN 46660
(219) 259-7051 — FAX (219) 255-1778

No Extra Fee For Charges!

VISA MasterCard DISCOVER

We Verify Charge Card Addresses

***Shipping, Handling, Insurance**

Order Amount	Charge
less than $19.99	$3.75
$20.00-$39.99	4.75
$40.00-$74.99	5.75
$75.00-$149.99	6.75
$150.00-$299.99	7.75
$300.00 & up	$CALL

ORDER TODAY CALL 1-800-PROMPT-1

COMMODORE 64 and COMMODORE 128 are registered trademarks of Commodore Electronics, Ltd. AMIGA is a registered trademark of Commodore Amiga Inc., NOTE: Due to publishing lead-times, product prices and specifications are subject to change without notice. * APO, FPO, AK, HI, CN, VI, GU, and foreign orders are subject to additional shipping charges. R3Q

Circle 155 on Reader Service card.

GEOWATCH

Discover the hardware that can enhance the scope and power of your GEOS experience.

By DONALD R. EAMON

GEOS CAN ELEVATE Commodores from simple text-based tools to graphics machines that are capable of greatness. Developing that potential to its fullest requires more hardware than just the 1351 mouse, however. Read on for a look at relatively inexpensive hardware add-ons that can, when combined with GEOS, turn your C-64 or C-128 into an impressive powerhouse.

PRINTERS

Dot matrix printers are GEOS's weakest link. Most Commodore compatibles (MPS 801, 803, 1000 or one of the many third-party C and VC models that use Commodore's serial cable) print graphics only at a low resolution of 60 dots per inch (dpi) horizontally, which results in incomplete printouts. Epson FX-80, Star NX, IBM 5152 and Epson LQ 24-pin compatibles, when linked to a Centronics parallel interface, are an improvement, since they duplicate GEOS's 80 (horizontal) by 72 (vertical) dpi screen resolution.

You can further enhance printer performance by using one of a multitude of shareware printer drivers that have appeared on QuantumLink and on Commodore BBSs across the country. Through interpolation routines, these drivers generate graphics quality far beyond the compatibles' 60 dpi and standard 80 dpi. See Figure 1 for examples of what different types of printers produce.

For most of us, a more powerful dot matrix printer improves graphics/text work done either in or out of GEOS. But, if cost is not a factor you must consider, PostScript laser printers produce the ultimate in GEOS quality. Via an RS-232 interface, lasers output near-typeset quality from geoWrite and geoPublish files.

EXPANDING GEOS

When using GEOS 2.0 with a C-64, you won't have full control of a 1581 disk drive, since the control routines don't fit into the 64's already-crowded memory. So before investing in an 800K 3½-inch disk drive, consider adding a RAM expansion unit (REU).

The REU creates an "electronic drive"; that is to say, a high-speed 1541 clone with a 1764 REU or a high-speed 1541/71 clone with a 1750 REU. This addition suffers no load/save lag and eliminates the need to place the deskTop and Configure files on work disks.

Today, RAM expansion has a "bad news/good news" aspect. The bad news is that Commodore stopped making REUs just as computerists were discovering their worth. The good news is that GEOS 2.0 still supports the 1750/1764 series—and Berkeley Softworks' new GEORAM 512, as well.

GEORAM 512

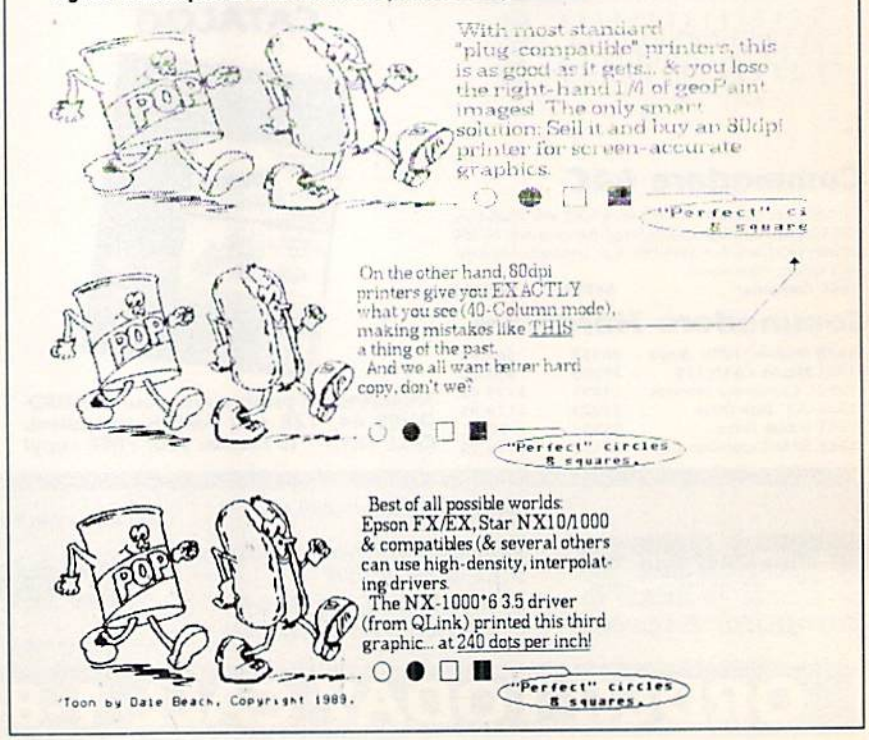
GEORAM 512 isn't meant to replace your REU, unless you want to move up to 512K from Commodore's 256K 1764. Rather, it's more of an option for those who waited too long to buy Commodore's unit.

Slightly longer than an REU, GEORAM 512 is a slim, one-half-megabyte RAM card that easily fits into cartridge ports. GEORAM's greatest strength is that it not only drives GEOS on the 128, but also on the 64 without your needing to add a heavy-duty power supply.

Because of internal differences between GEORAM and the REU, BSW's cartridge will not run non-GEOS programs that access Commodore's RAM expansion. GEORAM comes with its own GEOS system disks and is not battery backed, so if you power down before saving your work to a real disk, your RAM files will become extinct. According to the folks at Berkeley, they do not now plan to add battery or ac backup power to GEORAM.

After a month of using GEORAM 512, I found that it mimics Commodore's REU in every aspect except one: It lacks the DMA (move data) feature that's built into Commodore's REU. The result is barely noticeable, however. ►

Figure 1. Examples of what different printers can produce.


With most standard "plug-compatible" printers, this is as good as it gets... & you lose the right-hand 1/4 of geoPaint images! The only smart solution: Sell it and buy an 80dpi printer for screen-accurate graphics.
"Perfect" circles & squares.
On the other hand, 80dpi printers give you EXACTLY what you see (40-Column mode), making mistakes like THIS a thing of the past. And we all want better hard copy, don't we?
"Perfect" circles & squares.
Best of all possible worlds: Epson FX/EX, Star NX10/1000 & compatibles (& several others can use high-density, interpolating drivers. The NX-1000*6 3.5 driver (from QLink) printed this third graphic... at 240 dots per inch!
"Perfect" circles & squares.
'Toon by Dale Beach, Copyright 1989.

What do the C-64, THE C-128, the Amiga and the IBM all have in common?

Us.

We're Software Support International. For the last several years, we've specialized in doing just one thing: serving the needs of the Commodore computer community. We develop our own software and hardware. We also enable our customers to enjoy substantial savings on thousands of the best products ever made for their computers. And most importantly, we provide what has often been described as the best technical support available in the industry today.

Do business with us just once, and we'll proudly show you the differences that set us apart. We stock our products, so most orders are filled and shipped the same day that they're received, no extra charge. Unlike many other companies, we don't penalize you for using your credit cards - we add no surcharge for VISA, MasterCard, or Discover card orders. And once you become a customer of ours, you'll get additional benefits. We'll ship your orders immediately, without waiting two weeks for your personal check to clear. We'll let you order C.O.D., even though so many other companies no longer do. And our regular customers get special offers that are not made available to the general public.

Many of you are familiar with us. In fact, many of you are already our customers. If you are, you know what we're talking about - and if you aren't, you don't know what you're missing.

In any case, we'd like to introduce you to our current product line up. In the past we've bought several pages of advertising in several magazines month after month, and still we've only been able to tell you about a fraction of our available products. Now we'd like to try something new.

Just give us a quick call on our TOLL FREE line, and we'll send you our latest 64 / 128 / Amiga / IBM product listing, a colorful catalog of over 50 pages jam-packed with the newest, the hottest, the latest software and accessories available for your computer today - and ALL at discount prices that are so low you'll have to see them in print to believe them!

Other companies come and go. Some even crop up just in time to "cash in" on the Christmas season each year, only to disappear when you need their support most. Not us. We've been here for years. Give us a chance to show you why.

Do something good for your budget, your computer, and your peace of mind and call us today - the money you save will be your own.

FREE CALL — FREE CATALOG
WHAT ARE YOU WAITING FOR?

1-800-356-1179

FOR CUSTOMER ORDERS OR YOUR FREE CATALOG

SOFTWARE SUPPORT INTERNATIONAL

SOFTWARE SUPPORT INTERNATIONAL

Big Enough To Serve You.
Small Enough To Care.

(C)1990 SOFTWARE SUPPORT INTERNATIONAL ★ 2700 NE Andresen Road Suite A-1, Vancouver, WA 98661 ★ 206/695-1393
C-64, C-128, Amiga, and IBM are registered trademarks of Commodore Business Machines and IBM.

Scrolling around a GEORAM-resident geoPaint page is *slightly* slower than doing the same with an REU, but both are far faster than scrolling from physical drives. When you consider that GEORAM 512 retails for less than the 1764 sold at a discount, and that it needs no hefty add-on power, the DMA loss is a small price to pay for a dramatic speed increase.

Time Waits for No One

GEOS 128 2.0 lets users open files directly from all View displays. Those who faithfully input time and date can easily use the Date option to find the latest update of a file.

For me, the deskTop View by Date option is often a waste of time, for I usually forget to set GEOS's software clock before beginning a session. So, much of my work sports the time and date of the current deskTop plus an hour or so—hardly an efficient way to track back-up files! After wasting many hours in file searches, I longed for a battery-backed clock.

The Right Time cartridge from Ardelt Engineering forever puts to rest opening Preference Manager or using GEOS 2.0's Time box. Unlike early kits that swallowed joystick port two or involved rewiring the computer itself, this cartridge merely plugs into the user port, and it has an in-line, flow-through design that doesn't interfere with RS-232 printer or modem operations.

In addition, with a little programming knowledge (examples and routines are included on a disk), The Right Time can be used with non-GEOS software and with both Basic and machine language programs.

Although initial setting of the time and date is complex, once you've done so and placed Autotime (an auto-execute GEOS file for 1.3 and higher versions) on your system disk, you need never set the time again, and View by Date truly becomes a valuable menu selection. The user-replaceable battery should last two years, or longer if you're a daily computer user.

Today, Tomorrow and Beyond

Creative Micro Designs produces hardware that geoUsers will love. A ROM replacement kit called JiffyDOS (the latest version is 6.0) speeds up 1571/81 disk operations with GEOS 128 (GEOS 64's Disk Turbo software is quite fast, so it bypasses JiffyDOS ROMs).

Would you like to keep your GEOS RAM disk data alive after shutting off your computer? CMD's RAMLink, with its separate power supply, will let you do just that. Scheduled for release soon, RAMLink's internal operating system also lets most Commodore software read a 17XX REU as a high-speed disk drive, much as GEOS does. In addition, RAMLink will access up to one megabyte of RAM storage.

For mass storage with GEOS, we presently have only the 1581 drive. Also scheduled to appear soon are CMD's GEOS-ready, reasonably priced 20- and 40-megabyte hard drives—this should finally put mass storage in the hands of Commodore owners. ■

Don Eamon is a full-time freelance writer and computer consultant who has run GEOS SIGs on several BBSs.

Table 1. Prices and Manufacturers' addresses.

GEORAM 512
$124.95
Berkeley Softworks
2150 Shattuck Ave.
Berkeley, CA 94704

JiffyDOS 6.0
C-64/$59.95; C-128/$69.95
RAMLink
price unavailable at press time
HD-20; HD-40
$599.95; $799.95
Creative Micro Designs
PO Box 789
Wilbraham, MA 01095

The Right Time
$59.95
Ardelt Engineering Co.
8175 East 39th Ave.
Denver, CO 80207
(include a detailed description of your Commodore/GEOS layout)

VSI

1-800-544-7638
Inquiries & Oregon buyers
1-503-246-0924

SCHOOLS OUR SPECIALTY

CABLES, 5 YEAR REPLACEMENT GUARANTEE

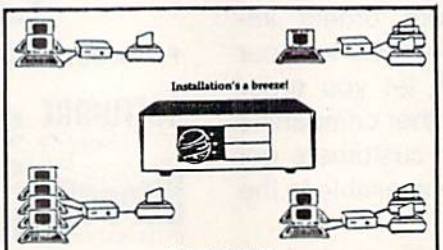
5 Pin, M M, 6 ft.	M M, B56MM	$5.95	M F, B56MF	$5.95
5 Pin, monitor, 2 RCA	M652	$4.95	3 RCA	M653	$5.95
6 Pin, M M	6 ft. B66	$5.95	9 ft. B69	$7.95
6 Pin, M M	18 ft. B618	$12.95	36 ft. B636	$19.95
6 Pin, M F			6 ft. A66	$5.95
8 Pin, monitor, 2 RCA	M382	$4.95	5 RCA	M385	$5.95
DB9, Joystick M F			12 ft. JS12	$4.95
DB9, Y cable			1F 2M	JSY	$4.95
DB9, 6 ft.	M M, DB9MM	$7.95	M F, DB9MF	$7.95
DB25, M M	3 ft. R3MM	$7.95	6 ft. R6MM	$8.95
DB25, M M			10 ft. R10MM	$10.95
DB25, M F			6 ft. R6MF	$8.95
Parallel, M M	6 ft. C6MM	$9.95	10 ft. C10MM	$11.95
Parallel, M F	6 ft. C6MF	$9.95	10 ft. C10MF	$11.95
IBM Printer	6 ft. IBP6	$7.95	10 ft. IBP10	$9.95
IBM Printer	15 ft. IB15	$16.95	25 ft. IBP25	$24.95

We now stock a full line of gender changers, null modems, adaptors, testers and connectors.

COOLING FAN $29.95 Heat is a #1 enemy to your disk drive. Reduce bad loads and costly repair bills with a fan, keep your 1541 or 1571 cool. Quiet, surge and spike protection, EMI filtering.

TO ORDER: VISA, MASTER CARD, money orders, or check (allow 21 days for check to clear) accepted.

FREE CATALOG, send a post card with your name & address.



DATA SWITCHES
VSI switches end cable swapping, share equipment. Need extra cables, we stock a broad selection.
- ONE YEAR WARRANTY, Deluxe All Metal Case
- Compact Design, Rotary Switch
- Full Shielding, Exceeds FCC Requirements

	AaBb=2 to 2		AB=2 to 1		ABCD=4 to 1
5 Pin			AB	$29.95	ABCD $39.95
6 Pin			AB	$29.95	ABCD $39.95
8 Pin Mini	AaBb	$39.95	AB	$24.95	ABCD $34.95
DB9			AB	$24.95	ABCD $34.95
DB25	AaBb	$39.95	AB	$24.95	ABCD $34.95
Parallel	AaBb	$39.95	AB	$24.95	ABCD $34.95

OMNITRONIX INTERFACES

HOT SHOT PLUS $84.95
Printer interface, 8K buffer, expandable to 64K. 6 fonts plus editor in ROM, prints double or quad density, CPM selection.

DELUX RS232 INTERFACE $39.95
Connects standard modems or RS 232 accessories to the C64, C128, 64C, SX64, VIC20, or Plus4.

SERIAL PRINTER INTERFACE $84.95
Use a standard RS232 type printer on the Commodore. Connects to Serial Bus (6 pin).

IBM to CBM Adaptor $37.95
Now use your C64 compatible printer on a PC compatible. Includes a specially designed cable and software.

Reset Button for C64	$8.95
Disk Notcher	$4.49
Dust Cover, C64, Vic-20	$5.95
Dust Cover, 1541	$5.95
Dust Cover, C128 or 1571	$6.95
Mouse Mat	$5.95
Disk Sleeves, 100 pack	$7.95
Joystick Rapid Fire	$5.95
Aprospand 64	$26.95
Cartridge Port Extension, 12 in	$19.95

MODEM LINK, RS232 Interface $15.95
Interfaces a Hayes compatible modem to C64, 64C, C128 or 128D. Full plastic case, 3 x 1½.

VSI 3641 S.W. Evelyn, Portland, OR 97219, Shipping $3.00, VISA, MC, money orders accepted. Price & stock, subject to change.

Circle 51 on Reader Service card.

COMMODORE CLINIC

Advice about head alignment problems, disk errors and ROM upgrades.

By ELLEN RULE

Q *My C-128 has an annoying glitch. It occurs most often after I've been using C-64 mode. This message appears, and I can't load PaperClip III or Partner 128:*

```
   PC   SR  AC  XR  YR  SP
; 82042 31  75  27  80  F2
```

What does this mean?

—M. SIEGEL
GREAT NECK, NY

A The cryptic message is from the 128's built-in machine language (ML) monitor, a programming and debugging tool for ML programmers. The characters in the top row represent the following: PC: Program Counter; SR: Status Register; AC: Accumulator; XR and YR: X and Y Registers; and SP: Stack Pointer. The numbers below are the memory address and the hexadecimal values that describe the state of the processes taking place as the machine language program runs.

Normally, to get to the machine language monitor from Basic 7.0, press the F8 key (shifted F7), or type in MONITOR. If you accidentally find yourself in Monitor mode, pressing the X key and return brings you back to Basic 7.0. (For those interested in knowing more about machine language, Jim Butterfield's book *Machine Language for the Commodore 64, 128 and Other Commodore Computers* is an excellent source of information.)

On start-up, the C-128 performs several tasks before presenting the Ready prompt. Arriving in the monitor on reboot indicates that this start-up sequence has been disrupted, possibly because of a problem in your Partner 128 cartridge. Try running your 128 with the cartridge disconnected to see if the symptoms continue. Also try shutting off the computer and waiting a minute before rebooting to allow all of the C-128's memory to reset. If neither method helps, consult a Commodore-authorized repair person.

Q *My 1571's been giving me problems when writing to the second side of a disk. What do you think is the problem? If it's alignment, what's the best way to fix it?*

—R. WRIGHT
BRONX, NY

A It's not uncommon for the second drive head (the one that gives your 1571 its double-sided capacity) to be slightly crooked, in which case you should consult a technician. Alignment problems aside, disk errors can also be related to your operating mode or the ROM version of your drive.

If a disk is formatted in 1541 mode, only one side is formatted, so trying to write to the other (unformatted) side won't work. For double-sided format, lock the drive in 1571 mode before formatting by typing in OPEN 15,8,15, "U0>M1":CLOSE15.

Another problem stems from trying to validate a 1571-formatted disk in a 1541 drive (or while in 1541 mode on early 1571s), since track numbers greater than 35 are inaccessible to the 1541 Disk Operating System (DOS). If the validation doesn't abort, the procedure might write a zero to (in other words, turn off) the double-sided flag in the disk's block allocation map. Thus, a disk formatted as double-sided may no longer be perceived as such by the drive.

The 1571 ROM revision (310654-05) in the spring of 1987 included corrections to this 1541-mode validation problem, as well as some seemingly random problems affecting relative files. If your problem seems to be with relative (REL) files on the second side of the disk, a Commodore repair technician should be consulted regarding upgrading your drive's ROM chip.

Q *Is there a program available that aligns the 1571 mode of my 1571 disk drive, without affecting the 1541 mode?*

—ETHEL DRAGON
PORTLAND, NY

A No. The drive head used in 1541 mode is part of the same mechanism used in 1571 mode. Since head alignment affects how far the head unit advances and retreats, and since the heads move as one unit, there's no standard alignment procedure for 1571 mode that won't affect the placement of the head in 1541 mode.

Q *We've just added an Amiga to our flock of 64s and 128s. Is it possible for the Amiga and a 128 to share the use of our Star NX-10 printer?*

—BUTCH HERBERT
SANBORNVILLE, NH

A Yes, computers can share peripherals via an A-B switchbox. For your situation, a parallel A-B switchbox will accept the parallel connector from both the Amiga's printer cable and the C-128's parallel interface. A parallel-to-parallel cable will connect the box to your NX-10. I've also used parallel A-B switches to connect two printers to one computer so that I could, for example, use paper in one printer and labels in another.

Switchboxes can generally be used to control devices that share a common mode of interface. My Amiga shares a 1541 drive with my C-64 via the 64 Emulator cable from ReadySoft (PO Box 1222, Lewiston, NY 14092) and a 5-pin DIN A-B switchbox. I've also set up the sharing of a Hayes-compatible modem by connecting a serial switchbox to both the Amiga's serial port and an RS-232-interfaced C-64. ABCD switchboxes allow 4-to-1 interfacing, if more than two peripherals are involved. One source of switchboxes, including the 5-pin DIN A-B model, is VSI (3641 SW Evelyn, Portland, OR 97219; phone 1-800-544-7638).

For safety's sake, don't change the switch while the attached peripherals are "live"; the small amount of power that may be present can damage your components. Also, communications mix-ups may occur if you switch components mid-stream, since computers often send "handshake" signals and initialization sequences to their peripherals on boot-up. Switching components could cause ►

the unrecognized component to behave in unexpected ways.

Q *What do you add to a program to avoid getting the Basic screen when you press run-stop/restore?*

—JOE POSILLICO
SOUTH FARMINGDALE, NY

A In C-64 mode, enter POKE 808, 239 to disable the run-stop key; disable the restore key with POKE 792,193. Enable run-stop with POKE 808,237 and restore with POKE 792,71.

In C-128 mode, POKE 808,100 disables run-stop and POKE 792,125 disables restore. Enable run-stop with POKE 808,110 and restore with POKE 792,64.

Q *Some time back I bought new ROMs for my C-128 and 1571 to take care of problems such as the 1571 having trouble reading the second side of a disk and the infamous Save-with-Replace bug. I'd been using the @Save command until I noticed an update in Commodore Clinic (RUN, October 1986), which stated that the bug is still with us! Did I pay $35 for nothing? Is the bug still there or not?*

—HAROLD BENTLEY
HILLSBORO, MO

A The Save-with-Replace bug, the operating code error that supposedly causes disks to become hopelessly scrambled, was addressed again in revision 05 of the 1571 ROM chip, released in 1987. Commodore's Fred Bowen, who was instrumental in upgrading the ROMs, says that while there's still plenty of conjecture about the Save-with-Replace bug, it hasn't been shown to exist since version 04 (not publicly released). Regardless of this bug, it's important to realize that the ROM revision solved many problems that may not be obvious, resulting in a significant improvement in the overall operation of the machine.

With the addition of the 128 ROM upgrade chip set, you're benefitting from improved handling of several functions, such as the operation of RAM expansion and RAM DOS. By the way, C-128D owners (US version) don't have to worry about the ROM upgrade, since the 128D uses a different ROM chip.

If you're skittish about the Save-with-Replace bug, start with a freshly formatted work disk before typing in a listing. As you go along, save versions of the program appended with the line number you've just entered, for example: MYPROGRAM350, MYPROGRAM500, etc. When you've got a finished version of the program, copy it to another disk and reformat the work disk for other uses. This method of "incremental saves" reduces the extent of loss should one of the saves become corrupted. ■

Do you have a problem or question about your Commodore computer system, software or programming? Just send your questions to Commodore Clinic, RUN Magazine, 80 Elm St., Peterborough, NH 03458. Queries are answered only through this column, and, due to the volume of mail, only questions likely to appeal to the majority of our readers can be published.

COMPUTER REPAIR

205-739-0040

AUTHORIZED COMMODORE SERVICE CENTER

COMMODORE DISK DRIVES
1541 . . . . . $45.00
MSD, 1571 . . . . . 85.00

COMMODORE MONITORS
1701, 1802, 1084,
1702, 1902 . . . . . $85.00

COMMODORE COMPUTERS
C-64 . . . . . $45.00
C-128 . . . . . 85.00
SX-64 Portable 69.00

COMMODORE PRINTERS
. . . . . $75.00

MOTHERBOARD REPAIR (Send Board Only)
64, 1541 . . . . . $35.00 128, 1571 . . . . . $59.00

Amiga
Call for price

!!! FAST TURNAROUND !!!

All parts and labor included. $6.50 shipping
$15.00 APO and business equipment.

WE BUY ALIVE

C64	$CALL
1541NEWT	50.00
1541ALPS	45.00
SX64	150.00
1571, C128	100.00
1526/802	45.00

MUST BE COMPLETE
$CALL ON DEAD EQUIPMENT

POWER SUPPLIES

C64	$ 19.95
C128	49.95
1541, 1581	36.75
AMIGA 500	75.95
AMIGA 1000	134.95
AMIGA 2000	141.98

CABLES AND MISC.

REG 6 PIN DIN	$ 4.45
12' 6 PIN DIN	6.95
18' 6 PIN DIN	7.95
MONITOR CABLES	4.45
TV SWITCHES	2.50
COMMODORE KEYBOARD	CALL
WICO BAT HANDLE	18.95
DSDD-Disk 25 for	10.95

COMPUTER EQUIPMENT

C64 REFR	$ 99.00
C128 REFR	219.00
1702 CBM	169.00
CBM 1541 ALPS	159.00
STAR NX 1000C	199.00
EPSON INTERFACE	53.95

PARTS

901 ROMS	$11.95
STR54041	12.50
41464	9.95
6560 PULLS	10.00
74LS629	4.95
82S100	12.95
325302	9.95
325572	9.50
8701	6.85
8502	9.00
6526	12.50
6522	4.50
6520	3.85
6532	6.29
6502	2.85
6510	9.95
6581	12.50
6567	19.95
4164	2.75
8721	16.85
C128 UPGRADE ROMS	23.65

COMPUTER SHOPPE OF ALABAMA
1310 2nd Ave. NW, Suite C
Cullman, AL 35055

DEALERS SEND FOR PARTS CATALOG
PRICE SUBJECT TO CHANGE
$25.00 MIN ORDER

GET MORE PLEASURE FROM THE BIBLE WITH **LANDMARK**

The Computer Reference Bible

Here's what LANDMARK will enable you to do:

- ✔ SEARCH THE BIBLE—Find Phrases, words or sentences.
- ✔ DEVELOP TOPICAL FILES—Copy from The Bible text and search results then add your own comments and notes.
- ✔ COMPILE YOUR PERSONAL BIBLE—Outline texts in color. Add notes, comments, and references. Make your Bible Study organized and on permanent record!
- ✔ CREATE FILES—Then convert them for use with wordprocessors like Paperclip and GEOS.
- ✔ MAKE SUPPLEMENTARY STUDY FILES—For specific study and develop translation variations.

KJV or NIV ($10.00 royalty charge for NIV)

$119.95 plus $4.00 shipping in cont. U.S.A. $7.50 Canada

BOTH versions for $189.95 plus $10.00 NIV royalty plus shipping

v1.2 for **C64** and v2.0 for **C128**

CALL OR WRITE TODAY FOR A FREE BROCHURE

P.A.V.Y. Software P.O. Box 1584
Ballwin, MO 63022 (314) 527-4505

Circle 30 on Reader Service card.

Circle 221 on Reader Service card.

COLOR RIBBONS & PAPER

COLOR RIBBONS
RED, BLUE, GREEN, BROWN, PURPLE, YELLOW

Ribbons — Price Each	Black	Color	Heat Transfer
Brother M1109	4.95	5.95	7.00
C. Itoh Prowriter Jr.	7.00	9.00	–
Citizen 120D/180D	5.00	6.00	7.95
Commordore MPS 801	4.50	5.25	5.75
- MPS 802/1526	6.25	7.25	–
- MPS 803	4.95	5.95	7.00
- MPS 1000	3.95	4.95	6.75
- MPS 1200/1250	5.00	6.00	7.95
- 1525	6.50	8.00	–
Epson MX80/LX800	3.75	4.25	6.75
Okidata 82/92	1.75	2.25	4.50
Okidata 182/192	6.50	7.50	6.00
Panasonic K-XP 1080	6.75	7.75	–
Seikosha SP 800/1000	5.25	6.50	7.95
Star SG10	1.75	2.25	4.50
Star NX10/NL10	5.00	6.00	7.95
Star NX1000	4.50	5.50	6.75
Star NX1000C — 4-Color	–	8.75	–

COLOR PAPER
BRIGHT PACK —
200 Sheets/50 ea. color: Red, Blue, Green, Yellow. 9 1/2 × 11 — $11.90/pk.
PASTEL PACK —
200 Sheets/50 ea. color: Pink, Yellow, Blue, Ivory. 9 1/2 × 11 — $11.90/pk.

COLOR BANNER, PARTY BANNER, CHRISTMAS BANNER, HAPPY B-DAY BANNER, CONGRAT'S BANNER — 45'/Roll — $9.95/Ea. Roll

COLOR CERTIFICATE PAPER — 100 Shts./Pk. — $9.95/Pk.

GREETING CARDS — 50 Cards & 40 Env./Pk. — $11.95/Pk.

T-SHIRT RIBBONS (Heat Transfer) — Call For Price & Avail.
COLORS: Red, Blue, Green, Brown, Purple, Yellow, Black

COLOR DISKETTES
5 1/4" DS/DD Rainbow Pack. 10/pack — $12.50

For ribbons & paper not listed above, call for price. Price & spec. subject to change w/o notice. Min. order $25.00. S & H $3.50 minimum. Visa, M.C., C.O.D.

RAMCO COMPUTER SUPPLIES
P.O. Box 475, Manteno, IL 60950 U.S.A.
(U.S.A.) 800-522-6922 • (Canada) 800-621-5444
815-468-8081

Circle 232 on Reader Service card.

JASON-RANHEIM
CARTRIDGE MATERIALS FOR YOUR COMMODORE 64 or 128

Quality Products from the World Leader!

- Promenade C1 EPROM Programmer
- Game Type Cartridges
- Bank Switching Cartridges
- RAM/ROM Combination Cartridges
- Capture Archival Cartridge System
- Cases, EPROMS, Erasers, Etc.

Call or write for complete information!

Call Toll Free	800-421-7731
from California	916-878-0785
Tech Support	916-878-0785

JASON-RANHEIM
3105 Gayle Lane
Auburn, CA USA 95603

Circle 202 on Reader Service card.

RUN AMOK

Item: Due to an editorial oversight, an error cropped up in John Ryan's article, "Online, In Touch, Out of Sight," in the February 1990 issue. In Table 4 on page 31, the city, state and ZIP codes of GEnie and American PeopleLink were interchanged (although the street addresses and phone numbers were correct). The correct addresses of both online services are as follows:

GEnie
General Electric Information Service
401 N. Washington St.
Rockville, MD 20850
800-638-9636

American PeopleLink
3215 N. Frontage Rd., Suite 1505
Arlington Heights, IL 60004
800-524-0100

WIN BIG MONEY!

As seen on the NBC Today Show

The COMPLETE
Lottery TRACKER and WHEELER™

Use Your Computer to help YOU pick the WINNING NUMBERS!

★ Record hundreds of past winning lottery numbers and dates! ★ Track as many State and International lottery games as you want . . . NO LIMIT! ★ Produce EXPERT trend charts to identify those HOT and DUE numbers! ★ Data Base Print . . . Now store up to 300 Drawings (50% increase in storage area)! ★ Automatic FIFO (first in . . . .first out) Data Base Feature! ★ BACK-UP and RESTORE of data base now automatic from menu! ★ Check your bets for winning cominations . . . Record ALL systems played including BONUS NUMBERS where applicable! ★ Print charts, Statistics, Recorded Numbers, and WHEELING SYSTEMS! ★ NEW Skip and Hit Chart Included!

Choose From The Worlds Most Popular Wheeling Systems

How Have Our Customers Reacted? . . . A.B., from Ozark, AL writes, "Our lottery group, using your (software), has produced 48 winning tickets for a total of $10,485.00 . . . E.M.D. from New York, NY, "It is a POWER-HOUSE with all the critical search programs that help one to select numbers to play." . . . and G.L.S. from Champaign, IL writes, "I have had the Tracker and Wheeler program for about 6 months and have won about $4,000.00 so far . . . THEY'RE GREAT!" . . . And from COMPUTER SHOWCASE in Albany, GA, "The lottery products we order from Entertainment-On-Line are the fastest selling line of software we carry." . . . The Miami Herald says, ". . . excellent analysis charts."

No other lottery software package has all of these features. When we say complete, WE MEAN COMPLETE! Easy to use MENU DRIVEN SCREENS! Limited use *ONLY* without printer. All wheeling systems and program features now take only seconds to complete! Why pay up to $150.00 for less?

DON'T HESITATE . . . ORDER NOW! Only $39.95 plus $2.00 S&H

ENTERTAINMENT-ON-LINE®, Inc. P.O. Box 553, Dept RM Westboro, MA 01581	Visa/MC Call TOLL FREE **1-800-824-7888 Ext. 283** In Canada **1-800-544-2600**

©1990 Entertainment-On-Line®, Inc. All Rights Reserved. NLPA

Circle 158 on Reader Service card.

MAY

COMING ATTRACTIONS

DO'S AND DON'TS—
Discover one-hundred-and-one hints and tips of computer use—everything from buying good-quality disks to avoiding computing problems—to extend the life of your computer and make your computing experience more enjoyable.

WHAT'S THE PROBLEM?—
Here are some important tips on do-it-yourself repairs and diagnostics to pinpoint problems with your Commodore system and keep it running smoothly.

RUN COPY 128—
Type in this easy-to-use file copier that's fast and works on your C-128 with any two disk drives.

GEORAM REVIEW—
Among the products reviewed next month will be Berkeley Softworks' GEORAM expansion card. If you're a GEOS user, you'll want to find out if you need this plug-in cartridge for additional memory and added performance.

RERUN PREVIEW—
Here's the lineup for the March–April 1990 ReRUN disk: **Colorout**—Knock down the colored wall with your C-64; **Speedy Viewer**—Check the contents of your C-64 disks; **Print a Month!**—Get organized with monthly calendar printouts. C-64; **Color Me Quick**—Make C-64 screen-color changes; **128 Basic Enhancer**—Four commands to edit or write programs; **Doing the Alphabet Shuffle**—Put this letter puzzle in order on your C-64; **Alien Strike**—Protect Earth from space attackers. C-64; **Basic Dater**—Identify the latest version of your C-64 or 128 program listings; **Connex**—A Tetris-type game for the C-128; **128 Mode**—Discover the secrets of the Directory command. Plus Bonus programs: **Grand Prix Challenge**—Auto racing on the 64; and **Snake Bite**—Snakes are loose in the lab! C-128.

LIST OF ADVERTISERS

(603) 924-7138 or (800) 441-4403
NATIONAL ADVERTISING SALES MANAGER: **KEN BLAKEMAN**
NORTHEAST/MIDWEST/SOUTHEAST SALES: **NANCY POTTER-THOMPSON**
WESTERN STATES SALES MANAGER: **GIORGIO SALUTI, (415) 363-5230**

Reader Service		Page
138	Berkeley Softworks	CIII
73	Briwall	33
30	Computer Shoppe of Alabama	58
166	Creative Micro Design	9
48	Damark International, Inc.	43
158	Entertainment On-Line	59
148	IDG Sega	CII
202	Jason Ranheim	59
227	Konami, Inc.	CIV
66	Loadstar	1
*	Lyco Computer	27
47	Microcomputer Games	7
*	Montgomery Grant	31
221	P.A.V.Y. Software	58
15	Protecto's Computer Direct	11
232	Ramco Computer Printer	59
*	RUN Funpak	5
	Run Works	15
	ReRUN Back Issues	25
	GEOS Companion	35
*	Schnedler Systems	19
245	Software Discounters	46
245	Software Discounters	47
17	Software Support Int'l.	55
*	SOGWAP Software	52
*	Strategic Simulations	2
*	Tab Books, Inc.	51
31	Tektonics Plus, Inc.	52
155	Tenex Computer Express	53
190	Terminal Optics	37
187	Utilities Unlimited	39
51	VSI	56
96	Xetec, Inc.	12

For further information from our advertisers, circle the corresponding Reader Service number on the adjoining card.
*This advertiser prefers to be contacted directly.

***RUN* ALERT:** As a service to its readers, *RUN* will periodically publish the names of companies who are having difficulties meeting their customer obligations or who have gone out of business. Readers are advised to contact **Susan Kaniwec, Customer Service Representative, *RUN* Magazine, 80 Elm St., Peterborough, NH 03458**, before dealing with any companies that may be listed. At present, there are none.

The illustration on p. 36, in the March issue, was done by David Garner. We apologize for the error.

PRESIDENT
ROGER J. MURPHY
EXECUTIVE VICE PRESIDENT/PUBLISHING DIRECTOR
STEPHEN D. TWOMBLY
VICE PRESIDENT OF MANUFACTURING/OPERATIONS
DENNIS S. CHRISTENSEN
DIRECTOR OF TECHNOLOGY RESEARCH
JEFFREY D. DETRAY

SINGLE COPY SALES DIRECTOR: **LINDA RUTH**
NEWSSTAND PROMOTION MANAGER: **DEBBIE WALSH**
DIRECTOR OF CREDIT SALES & COLLECTIONS: **WILLIAM M. BOYER**

MANUFACTURING MANAGER: **LYNN LAGASSE**
TYPESETTING MANAGER: **LINDA PALMISANO;** SYSTEM SUPERVISOR: **DOREEN MEANS**
TYPESETTER: **DEBRA A. DAVIES**
FOUNDER: **WAYNE GREEN**

Manuscripts: All manuscript contributions, queries, requests for writer's guidelines and any other editorial correspondence should be directed to *RUN*, Editorial Offices, 80 Elm St., Peterborough, NH 03458; telephone: 603-924-9471.

Subscription problems or address changes: Call 1-800-274-5241 (in Colorado, call 447-9330), or write to *RUN*, Subscription Services, PO Box 58711, Boulder, CO 80322-8711.

Problems with advertisers: Send a description of the problem and your current address to: *RUN*, 80 Elm Street, Peterborough, NH 03458, ATTN.: Susan Kaniwec, Customer Service.

Back Issues: *RUN* back issues are available for $3.50, plus $1 postage and handling, from: *RUN*, Back Issue Orders, 80 Elm St., Peterborough, NH 03458; or call 1-800-343-0728.

Inquiries regarding ReRUN: Write to ReRUN, 80 Elm St., Peterborough, NH 03458, or call 1-800-343-0728.

***RUN*'s BBS**: The RUNning Board is *RUN*'s reader feedback bulletin board, which you can call anytime, day or night, seven days a week, for up-to-date information about the magazine, the Commodore industry and news and information of interest to all Commodore users. Call: 603-924-9704.

RUN's Checksum & Program Typing Hints

TYPE IN *RUN*'S CHECKSUM, which serves for both the C-64 and for the C-128 in either 40- or 80-Column mode, and save it to disk before running it. When typing in a program from *RUN*, first load and run *RUN*'s latest version of the Checksum program, which contains a new feature explained below. The screen will display a SYS number (49152 for the C-64; 3328 for the C-128) that deactivates and reactivates the Checksum. Always disable *RUN*'s Checksum before attempting to run another program. Note: You can abbreviate Basic keywords; spaces affect the checksum only when within quotes; and the order of characters affects the checksum.

When you press return after typing in a program line, a one-, two-, or three-digit number from 0 to 255 appears in the home position. If this number matches the checksum value in the program listing, the line as you typed it is correct. If the number that appears doesn't match the checksum value, compare the line with the magazine listing to find your error. Then move the cursor back up to the line and make your corrections. Now, after you press return, the correct checksum value should appear. Continue entering the listing until all the lines have been correctly typed. Then deactivate *RUN*'s Checksum, using the appropriate SYS number, and save the finished program.

We sometimes get letters and phone calls from new readers who have typed in the Checksum program for the first time. They are confused by the "Out of Data Error in Line 30" message that appears when they try to run the Checksum program. Understandably, they compare line 30 of the listing with line 30 as they typed it in, and cannot find anything wrong. The message unintentionally misleads them into thinking the error is in line 30, whereas the typing mistake is actually somewhere in one of the Data statements in lines 190–350.

So, we've added a new feature to the Checksum program that alerts readers to the number of the Data statement line in the Checksum program where an error has actually been made. **Note that this feature works *only* on the Checksum program itself, and not on any other program listing in *RUN*.**

After you've entered and saved the Checksum program to disk, run it. If you've made any errors in any of the Data statements, the program will give you a specific line number. Find the mistake, correct it, press return, save the program and run it again. Repeat this procedure until the Checksum program runs flawlessly.

Control Characters Demystified

All the graphics and control characters in the listings in *RUN* have been translated into understandable key combinations. They are the instructions you see inside the curly braces. For example, {SHIFT L} means you hold down the shift key while you press the L key once. You do *not* type in the curly braces. What appears on the screen will look quite different from what is designated inside the braces. Here are some more examples:

{22 SPACES}—press the space bar 22 times.

{SHIFT CLR}—hold down the shift key and press the clr-home key once.

{2 CRSR DNs}—press the cursor-down key twice.

{CTRL 1}—hold down the control key and press the 1 key.

{COMD T}—hold down the Commodore logo key and press the T key.

{5 LB.s}—press the British pound key (£, *not* #) five times.

Refer to the following paragraphs for any other Error messages you get from running any program listing in *RUN*.

Other Error Messages

Having heard from many users over the years about their difficulties with typing in listings, we've identified a few recurring problems that plague many people but are easy to fix. So read on and see if your problem is one of these.

- You get an "Out of Data in Line xxx" message. This means that a program line was reading from Data statements and reached the end of the data before it was done reading. There are two possible problems.

One might be with the program line that reads the data, usually a For-Next loop. Make sure you have the proper values for the loop, because if, for example, the listing has a loop of 0 to 150, and you've typed 0 to 160, you'll get the Out of Data message. If the loop is correct, then the problem lies in the Data statements themselves. One possibility is that you omitted a whole line of data. That's easy enough to find and correct. It's more likely that you've skipped one or more individual data items or typed in a period instead of a comma, which causes two data values to be read as one number. Check your typing carefully against the listing. Using *RUN*'s Checksum program when you type in listings from the magazine should help in this case.

- You get an "Illegal Quantity Error in Line xxx" message. This means you've read a number from a Data statement and tried to poke it into a memory address. The error occurs because the number is larger than 255 (the largest value a memory address can contain), which means that somewhere in your Data statements you've made an error by typing in a number larger than 255. Again, this is easy to check for and correct. First look in your Data statements for a number larger than 255. You might have added an extra digit, or perhaps you ran two numbers together (23456 instead of 234,56).
- You get a "Syntax Error in Line xxx" message. This could be almost anything. What it tells you is that there is something wrong in the indicated line. Usually you've misspelled a Basic keyword or omitted some required character. List the line and examine it carefully.
- You get an "Error in Data" message. This occurs in programs that add up all the data as read, and, when finished, compares that sum with what it should be if the data were typed in correctly. If it isn't the same, it means an error somewhere in typing the Data statements. Go back and check the data carefully. Correct the mistake(s), save the new version and try again.
- Finally, we urge everyone who intends to type in one of our listings to use *RUN*'s Checksum program, which will help you avoid every mistake we've mentioned above, except that it won't detect the omission of a line. R

Listing. *RUN*'s Checksum program. This program is available on *RUN*'s BBS for users to download.

```
10 REM RUN'S CHECKSUM 64/128 - BOB KODADEK
20 MO=128:SA=3328:IF PEEK(4096)THEN MO=64:SA=49152
30 I=0:CK=0:CH=0:LN=190
40 FOR K=0 TO 16
50 FOR J=1 TO 10:READ B:IF B>255 THEN GOTO 170
60 CH=CH+B:POKE SA+I,B:I=I+1:NEXT
70 READ LC
80 IF LC<>CH THEN GOTO 170
90 CH=0:LN=LN+10
100 NEXT K
110 POKESA+110,240:POKESA+111,38:POKESA+140,234
120 PRINTCHR$(147)STR$(MO)" RUN CHECKSUM":PRINT
130 PRINT"TO TOGGLE ON OR OFF, SYS"SA:IF MO=128 THEN 1
    60
140 POKESA+13,124:POKESA+15,165:POKESA+25,124:POKESA+2
    6,165
150 POKESA+39,20:POKESA+41,21:POKESA+123,205:POKESA+12
    4,189
160 POKESA+4,INT(SA/256):SYS SA:NEW
170 PRINT"YOU HAVE A DATA ERROR IN LINE ";LN;"!":END
180 REM DO NOT CHANGE THESE DATA STATEMENTS!
190 DATA 120,162,24,160,13,173,4,3,201,24,884
200 DATA 208,4,162,13,160,67,142,4,3,140,903
210 DATA 5,3,88,96,32,13,67,152,72,169,697
220 DATA 0,141,0,255,133,176,133,180,166,22,1206
230 DATA 164,23,134,167,132,168,170,189,0,2,1149
240 DATA 240,58,201,48,144,7,201,58,176,3,1136
250 DATA 232,208,240,189,0,2,240,42,201,32,1386
260 DATA 208,4,164,180,240,31,201,34,208,6,1276
270 DATA 165,180,73,1,133,180,230,176,164,176,1478
280 DATA 165,167,24,125,0,2,133,167,165,168,1116
290 DATA 105,0,133,168,136,208,239,232,208,209,1638
300 DATA 169,42,32,210,255,165,167,69,168,170,1447
310 DATA 169,0,32,50,142,169,32,32,210,255,1091
320 DATA 32,210,255,169,13,32,210,255,104,168,1448
330 DATA 96,104,170,24,32,240,255,104,168,96,1289
340 DATA 56,32,240,255,138,72,152,72,24,162,1203
350 DATA 0,160,0,32,240,255,169,42,208,198,1304
```

RUN CLASS ADS

LABELS LABELS LABELS LABELS LABELS LABELS LABELS

NEW !! LABEL MAKER™ V2.0 Commodore 64 only $29.95

Now – print labels up to 15x64 char's to 12 across using font and color capabilities of your printer. Select Underline **Bold** **EXPAND** Superscript Subscript and more!

Plus, merge data from your data base.

Make **Audio / Video cassette** (VHS) labels with ease.

Drop down menus and windows make **Label Maker™** the easiest and quickest program you'll ever use.

YES – We stock a compete line of labels too!

Keystone Software Dept R P.O. Box 8369 Pittsburgh, Pa 15218

BROWN BOX FAMILY HAS GROWN

128K & 256K CARTRIDGES NOW AVAILABLE

64K QBB owners can add QBB-B+Extender card to store 128K of C-64 or C-128 programs. These battery backed cartridges hold their memory even when the computer is turned off. Store dozens of programs for easy, instant access. Change contents whenever you wish. 32K QBB $79; 64K QBB $99; 64K QBB-B $95 (must have 64K QBB); 128K QBB $189; 256K QBB $289. Aprotek Extender $25.

Add $3 s/h ($5 overseas). MA residents add 5%. Call or write for "Write Stuff" pkg.

Brown Boxes, Inc., 26 Concord Rd., Bedford, MA 01730 (617) 275-0090; 862-3675

B.Sc. & M.S. in COMPUTER SCIENCE

The American Institute for Computer Sciences offers an in-depth correspondence program to earn your Bachelor of Science and Master of Science degrees in Computer Science at home. BSc. subjects covered are: MS/DOS, BASIC, PASCAL, C, Data File Processing, Data Structures & Operating systems. MS program includes subjects in Software Engineering and Artificial Intelligence.

AMERICAN INST. for COMPUTER SCIENCES
1704-RU 11th Avenue South
Birmingham, AL 35205
1-205-933-0339

√Book™

Your spreadsheet or data base doesn't really understand your personal checking!
Check out these features:

- √17 types of checking transactions
- √ Handles overdraft protection
- √ Remembers payees for fast entry
- √ Full screen editing and selective queries
- √ 8 types of reports plus check printing
- √ C64/40 col. and C128/80 col. programs
- √ Supports 1541/1571/1581 drives
- √ Schedules periodic transactions
- √ Custom transaction categories
- √ Monthly balancing
- √ Optional password protection
- √ Utilities with partition tools for sub-directories on 1581 drives
- √ Calculator, and more . . .

Computer Craftware • 17966 Arbolada Way • Tustin, CA 92680
(714) 953-8177 • $34.95+$2.50 S&H (CA res. add 6½%)

C64/128 PUBLIC DOMAIN SOFTWARE

REQUEST FREE CATALOG or send $2 for sample disk and catalog (REFUNDABLE). Categories include education, utilities, games, business, PRINT SHOP graphics, pre-tested programs and more. Rent for 75¢ or buy as low as $1.00 per disk side or for 80¢ for 70 or more. $20 order gets 4 free disks of your choice.

NEXT DAY SHIPPING! SINCE 1986

CALOKE INDUSTRIES (Dept BK)
PO Box 18477, Kansas City, MO 64133

REPAIRABLE

C-64 POWER SUPPLY

• $23.95 •

NEW NEW

• Heavy-duty—suitable for most peripherals, "Add-ons" • Conservatively rated: 1.8 amps • Large heat sink, runs cool • Complete schematic included (spare parts kit available) • 13 month warranty on entire unit • U.L. approved • *Automatic "thermal cut out" for computer circuit protection • Super price of $23.95 (plus UPS) • Sold world wide in various voltages and plug configurations • Dealer pricing available

THE GRAPEVINE GROUP, INC.
35 CHARLOTTE DRIVE, WESLEY HILLS, NY 10977
800-292-7445 914-354-4448 Fax 914-354-6696
*Over 50% of '64' failures were due to power supply 'runaway.' (Prices subject to change.)

BRAND NEW! STIK-GRIPPER™ SOLID STEEL JOYSTICK CLAMP!

- ALLOWS *ONE HANDED* JOYSTICK OPERATION!
- EXCELLENT FOR *FLIGHT SIMULATORS OR ANY GAME!*
- GIVES YOU THAT TRUE *ARCADE FEEL!*
- *TOTALLY* ADJUSTABLE! CLAMPS ANY JOYSTICK UP TO 4¾" WIDE!

CALL: (800) 843-1223
Or: Send a check or money order to:
RI RESIDENTS ADD 6% TAX

Duggan DeZign, Inc.
300 Quaker Lane
Suite #7
Warwick, RI 02886
(401) 823-8073

ReRUN DISKS—GREAT SOFTWARE FROM *RUN* MAGAZINE

Discover the value, variety and ease-of-use that ReRUN disks offer. Join the thousands of *RUN* magazine readers who subscribe to ReRUN. Each disk is packed with programs from the two most recent issues of *RUN*, plus never-before-published BONUS programs. ReRUN is great software at an affordable price, including:

• Word Processing • Spreadsheets
• Databases • Educational Applications
• Home Entertainment

ORDER A SUBSCRIPTION TODAY-ONLY $69.97
(Single issues $16.47 each)
CALL TOLL-FREE **1-800-343-0728**

RUN Class Ads

RUN Class Ads were specifically designed to provide the effectiveness of display advertising at the cost of classified advertising. This opportunity gives the Class Ad buyer the lowest cost available to reach *RUN*'s highly qualified circulation of exclusive Commodore 64 & 128 owners.

Need help in designing your Class Ad, questions about rates, frequency or size? Call **HEATHER PAQUETTE at 1-800-441-4403 or 603-924-9471.** We accept checks, money orders, Master Card or VISA.

RUN CLASS ADS

NOW AVAILABLE FOR THE AMIGA!

The MicroFlyte JOYSTICK, the only fully proportional continuously variable joystick control for Flight Simulator II

". . .it transforms an excellent program into a truly realistic flight simulation system" B.A.C.E.

MICROCUBE PRODUCTS

Commodore 64/128
- MicroFlyte ATC Joystick $59.95
- Test/Calibration Disk: A diagnostic tool for your joystick . . . . . $ 4.95

Amiga
- MicroFlyte Joystick—Plugs into the mouse port & works with most software . . . $119.95
- Analog Joystick. . . . . .$ 74.95

Include $4.00 shipping of joystick orders. FSII is a trademark of subLOGIC Corp.

MICROCUBE CORP., PO Box 488, Leesburg, VA 22075 (703) 777-7157

REPLACEMENT CHIPS, PARTS & UPGRADES

Replacement/Upgrade Chips	
6526	$12.25
6567	15.95
6510	10.95
6581	12.25
PLA	12.95
All 901 ROMs	10.95

And Many Others

NEW RELEASE
C-64 Fully Repairable Heavy Duty Power Supply/ Schematic; 1 yr. warranty; cost is $23.95

COMMODORE DIAGNOSTICIAN II™
Reference Aid #6

Just released... This newly updated Commodore Diagnostician II™ saves you money on Repairs & Downtime by promptly locating faulty IC chips on all Commodore computers and 1541 drives. Different sections contain "cross referencing" of chips and "block layout." (A schematic is included but not needed.) Over 14,000 "Diagnosticians" sold worldwide. . .See fantastic full page review in March '88 *Computer Shopper* Magazine. Price is $6.95 prepaid in US.

Send for catalog of exclusive new products

The Grapevine Group, Inc.
35 Charlotte Drive, Wesley Hills, NY 10977
1-800-292-7445 or 914-354-4448

Amiga Chips/Upgrades	
8562 (Denise)	$ 49.95
8564 (Paula)	49.95
Fatter (Super) Agnus	95.85
8520A1	17.95
A501/801-512K	99.95
256 x 4/120	8.95
1 meg x 1/120	9.40
68881/20	104.95
41256	Call

Our catalog has Print Heads, RAM expan. cables, Diagnostics, Manuals, Pwr. Supplies, Ribbons, many other products.

Our 9th Year
FAX: 914-354-6696
Dealer pricing available

Prices subject to change

KASARA MICROSYSTEMS 1-800-248-2983

FOR 10 YEARS
COMPETITIVE PRICES
QUALITY SERVICE
SAVE

VISA / MC / COD

your RELIABLE SOURCE for ICs—Amiga/ CBM. Expanding to include PC Product ICs. on a comprehensive inventory of Commodore, ICs, PSs, PC Bds. and Accessories. at prices guaranteed "below suggested retail."

MONEY on monthly specials and TIME with the 'Diagnostician,' our 1541/C-64 trouble-shooting guide.

I WAS A COMPUTER NERD

UNTIL MY COMPUTER TAUGHT ME TO PLAY THE GUITAR

Most computer programs don't improve your social skills. GUITAR TUTOR will. Playing an instrument is a skill people admire. GUITAR TUTOR will teach you using the same methods professional instructors do, but it's cheaper, faster, easier, and more fun. With GUITAR TUTOR and a little practice, you will play the guitar! *NOW ONLY $19.95* **(plus $2 S&H).** Specify C-64 or C-128 and send to:

Northern Star Software, P. O. Box 63, Oak Creek, WI 53154

CALL TOLL-FREE: 1-800-648-5286

SAVE YOUR FAMILY!

Genealogy software with features to fit every budget and requirement: LINEAGES/Starter, LINEAGES/Standard, LINEAGES/Advanced, and our most comprehensive FAMILY ROOTS. Prices $29 & up. Data is compatible between systems and you may upgrade from one to another. Call for FREE information. Satisfaction guaranteed.

QUINSEPT, INC.
PO Box 216, Lexington, MA 02173
1-800-637-ROOT 617-641-2930

DEPENDABLE SERVICE FOR YOUR COMMODORE!

C-64, 1541, C-128, or 1571: *FAST TURNAROUND!*

$25.00 PLUS PARTS

Send computer* or drive with name, address, phone, & describe problem. We'll call with parts estimate, then repair and return to you insured by UPS. Payment can be COD or VISA, M/C. Minimum charge, estimate only is $20. * Include power supply.

AUTHORIZED COMMODORE SERVICE CENTER
★ ★ ★ ★ ★
90 DAY WARRANTY ON ALL REPAIRS

TYCOM Inc. 503 East St. Pittsfield, MA 01201 (413) 442-9771

COMMODORE 64-128

FINEST PUBLIC DOMAIN PROGRAMS
PRETESTED QUALITY PROGRAMS • $1.50 • ON DISK
YOU PICK THE PROGRAMS THAT **YOU** WANT!!!
FREE DISK FULL OF PROGRAMS WITH FIRST ORDER

FOR YOUR OWN LIST AND DESCRIPTION OF THESE PROGRAMS SEND JUST A SASE TO:

JLH CO.
DEPT A
BOX 67021
TOPEKA, KS 66667

RUR BRAND NEW 128 GAME U2

Parsec is proud to introduce a new 80 column C-128 game. This 80 column graphic adventure game features full color/screen graphics, ML and 3D animation, over 1.5 megs of graphics, digi voice and sound, irq music and mouse. System requirement: **C-128 with 64K VDC or C-128D, 80 column monitor.** Other equipment supported: **RGB monitor, C1351, C1581, C1571, C1541, C1764, C1750.** Specify disk format (1541-71-81) with your order. Game includes a shrink wrap license. Prices listed below include shipping costs in US funds.

US with street address	$33.45	POBs, AL, HI	34.95
		Canada	36.95

Send your check or money order to: **Parsec, Inc. Att: 128 Game**
POB 111, Salem MA 01970

DIAGNOSTICIAN SERIES©

AMIGA™

Finds faulty chips on all Commodore and Amiga 500 computers

COMMODORE DIAGNOSTICIAN II (REFERENCE AID #6)©

Saves you money and downtime by promptly locating blown or faulty chips on all Commodore computers (and 1541 drives) by sophisticated cross reference grid methods. This revised 'Diagnostician' takes into account the newly released boards and new combination chips. (A schematic is included but not needed.) Over 15,000 sold worldwide, see fantastic full page review in *Computer Shopper* magazine. Postpaid price is $6.95.

THE GRAPEVINE GROUP, INC.
35 CHARLOTTE DRIVE, WESLEY HILLS, NY 10977
TOLL FREE 800-292-7445 (914) 354-4448 FAX (914) 354-6696

C128 C64 ALL NEW PD CATALOG

In this catalog, we now offer over 190,000 blocks of programs for your C-128/64. Over 45,000 for your 128. We now offer GEOS, CLIPART, BASIC 8, DEMOS, MOVIES and MUSIC disks. And all for only 75 cents a piece. Most disks avg. less than 10 blocks free. Plus, we offer color inkjet printing! An exceptional value! We can be reached online at:
Q-link = Parsec, Genie = JBEE, CIS = 76456,3667
To order our catalog, send us $2.00 (US funds). Personal checks and money orders accepted. Mail to:

Parsec, Inc.
POB 111, Salem, MA 01970

news | reviews | tips | examples | articles | geoworld

GEOWORLD

The definitive magazine of GEOS

Send check or m/o to:
GEOWORLD
38 Santa Ynez St.
Santa Barbara, CA 93103

$20.00 - 12 issues
OK

COMMODORE AMIGA SERVICE CENTER

AMIGA 500 (Repair) $65.00
C-64 (Repair) $39.95
includes parts/labor flat rate repair

C-128	$64.95
1541	49.95
1571	64.95
SX-64	69.95

CALL for Commodore Chips & Power Supplies at *low* prices.
24 Hour Turnaround

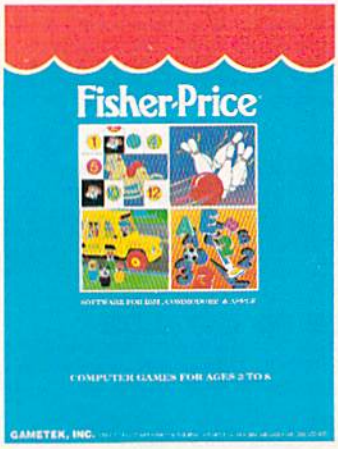
A&M Computer Repair
20 Guernsey Drive, New Windsor, New York 12550
1-800-344-4102 (914) 562-7271

From page 4.

THE BRITISH GOSSIP-MONGER *CTW (Computer Trade Weekly)* has ripped asunder the veil of secrecy surrounding Commodore's new Amiga 500-based CD-ROM system. In its January 23 issue *CTW* reported that, according to reliable sources, Commodore privately showcased a CD-ROM games console at CES. A public showing, according to the article, probably won't occur until the summer CES. *CTW*'s sources remain unnamed, in view of the "ultra stringent non-disclosure agreements" viewers had to sign. Now, *RUN*, one of many "important publishers" at the show, will neither confirm nor deny whether its editors got in to view the new machine and had to sign the non-disclosure statement. . .at least not until the ink dries.

FROM THE FRYING PAN INTO THE FLOPPY. That's what Eastman Kodak has done with its latest disks. The Verbatim disks are Teflon-coated and claim to safeguard your valuable data from fingerprints, spills or other smudges, which can simply be wiped off the surface. A Kodak spokesperson, who appears to be having a lot of fun with this promotion, is quoted as saying, "The only thing that sticks to our diskette is people's data."

EPYX IS BACK IN THE SOFTWARE BUSINESS, FOLKS! After a slight detour that included a management reorganization and laying off a large portion of its work force, Epyx is determined to return to its rightful place in the video and computer game industry. The ten-year-old company plans to continue to develop and market new games under the Epyx label. Also, the company, according to VP of Marketing and Product Development, Bob Botch, has repackaged some of its previously released software and tied it together with an attractive price tag. Epyx, one of the early developers of game software for home computers, is probably best known for its Games series of sports software.



DON'T READ THIS IF YOU'RE A CHILD PSYCHOLOGIST! No one will be left untouched by the pervasive computer phenomenon—not even three-year-olds. Fisher-Price, that most revered name in toys for young children, has created C-64 computer games for kids aged three to eight. The games are designed to help children learn and reinforce their skills in counting, memory, coordination, etc. The games may be OK, but we have to ask: Is playing games on a computer an appropriate way for a three-year old to be spending his or her time, and should we be encouraging it?

MOM KNOWS BEST. . . Following in the high-heeled footsteps of Heloise, Dear Abby and Ann Landers, Charlyne Robinson, better known as Konami Mom, is traveling around the country answering questions and offering advice to families on how best to integrate video games into the home setting. Sponsored by Konami, Mom helps families adjust to the inevitable video game playing and offers—not game-playing tips—but advice such as how to balance game playing with homework. "Our children have become so accustomed to electronics and electronic learning that some kids find traditional learning and entertainment conventional and boring. Just as our parents had to adjust to raising kids with television, we have to adjust to video games," says the mother of two boys who are avid video game players.

JUST WHEN YOU THOUGHT IT WAS SAFE. . . Like many of our readers, I'm concerned about our environment. I'll admit to a certain amount of smugness, since I always considered computer publishing a so-called "clean" industry. So, it came as a shock when I learned that IBM has been cited in a report entitled "Who's Who of American Ozone Depleters." The Natural Resources Defense Council listed companies dumping chlorofluorocarbon-like substances, which, some scientists claim, are depleting the Earth's ozone layer. For its part, IBM uses these chemicals to clean and degrease electronic components and metal equipment. We fervently hope that IBM—still reeling from a disastrous fiscal quarter—and other companies will stop using ozone-depleting products and find suitable substitutes.

Dennis Brisson

Dennis Brisson
Editor-in-Chief

ATTENTION GEOS USERS: THE WAIT IS OVER.

For everyone who's ever waited a tad too long for a GEOS screen to redraw itself or an application to load, congratulations. The wait is over. Your chips have come in.

The GEORAM expansion board—for both 64's and 128's—is here.

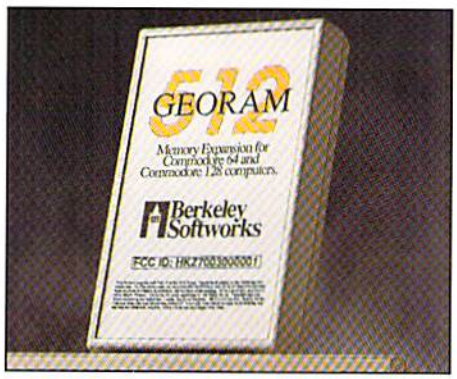
MORE MEMORY, LESS WAITING.

Developed exclusively for GEOS-equipped Commodores, these babies pack an unbelievable 512K of extra memory, which propels GEOS into light speed productivity. Accessories pop up in an instant. Screens redraw in a wink. And applications scream out in a frenzy as you whip them along with your mouse or joystick.

"An additional 512K of memory... is a really impressive upgrade... The usefulness of this becomes evident when using GEOS, as it can practically eliminate the... disk access you normally encounter." —***Run* Magazine**

Hard to believe? Believe it. GEORAM's disk transfer rate is literally 35 times faster than the 1541, 1571 or 1581 disk drive. Which has the industry chattering almost as much as when GEOS first arrived on the scene:

"The difference between operating... on a 640K machine instead of a 128K machine could be compared to flying a jet and walking. Tasks that would normally cause a delay while the disk was accessed run at the speed of light..." —***Commodore* Magazine**



Pretty heady stuff. But every word of it's true. Because GEORAM stores everything electronically. Which means your Commodore doesn't waste time spinning magnetic disks searching for data.

That not only increases your machine's performance. It also increases yours. Because the time you used to spend waiting is being put to better use drawing, writing or doing any of the thousands of things you're using GEOS for.

"RAM expanded C-series machines... running under the GEOS kernel—are nearly as fast and flexible as the powerhouse Mac's, ST's, Amigas and PC's." —***Computer Shopper***

So if you'd like to delete the delay, call us toll free at 1-800-888-0848 and order your GEORAM card today. You'll discover the difference in no time.

"It's the same GEOS, but unless you experience RAM expansion, you can't imagine the transformation... Some operations run a few seconds quicker, others (such as deskTop utilities) seem to appear before you select them... My RAM expander is the most cost-effective purchase I've ever made. Try one, and you'll never go back to magnetic media." —***Computer Shopper***

The GEORAM Expansion Card. It may have been a long time coming, but it's definitely been worth the wait.

Not available in retail stores!
No external power supply needed!

*On top of the disk turbo speed you already get with GEOS. Mail orders: Send name, address, city, state, zip and phone number along with check or money order for $124.95 plus $4.95 for postage and handling, made payable to Berkeley Softworks (Do not send cash) to: Berkeley Softworks Fulfillment Center, 5334 Sterling Center Drive, Dept. G9, Westlake Village, CA 91361. Allow two to four weeks for delivery.

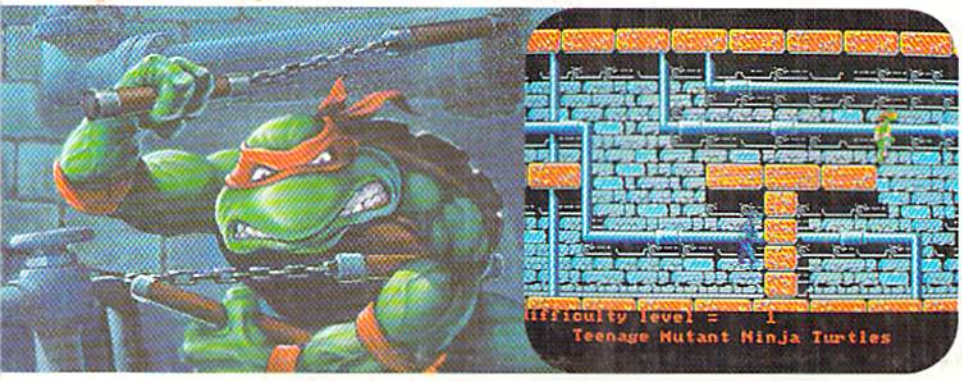
GEORAM
1-800-888-0848
extension 1756

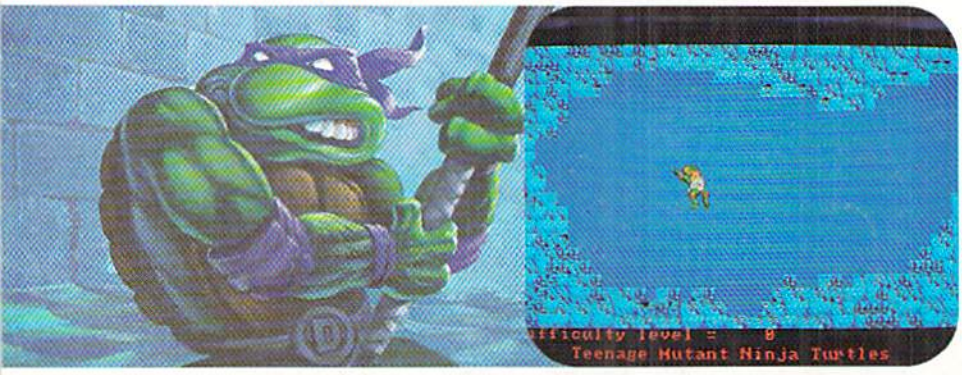
Berkeley Softworks

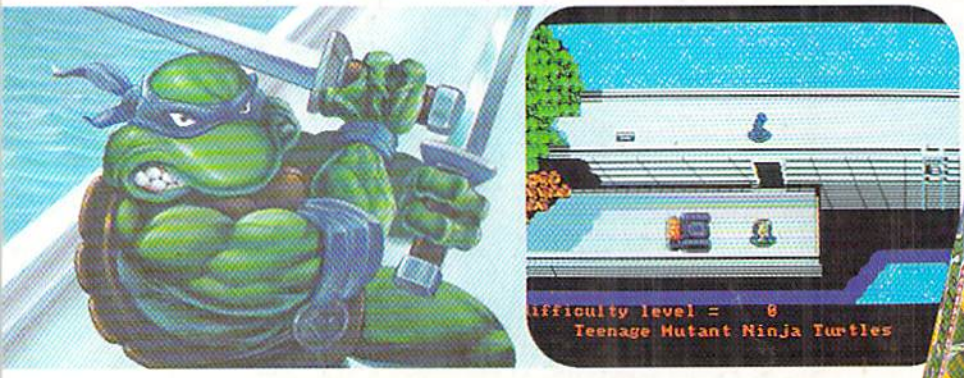
The brightest minds are working with Berkeley.

Circle 138 on Reader Service card.

FOUR COMPUTER HACKERS ARE ABOUT TO RAID YOUR DISK DRIVE.







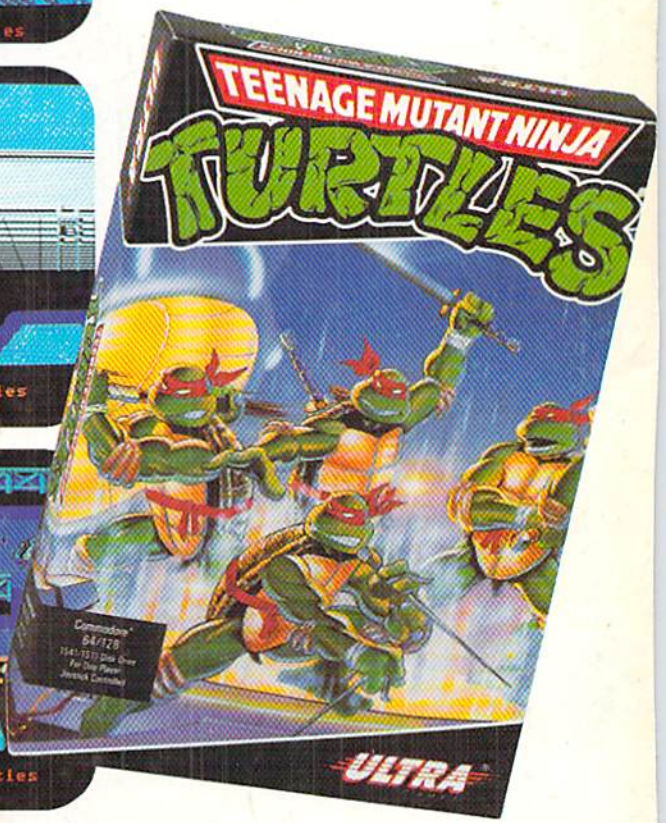
No computer will go unscathed, as Ultra's version of Teenage Mutant Ninja Turtles® storms into your disk drive to duke it out with Shredder™—a maniac more menacing than an army of mind-altered Bruce Lees.

But if they're to survive, you must command the role of each turtle, rumbling through a maze of Mouser™ infested sewers, criminally polluted rivers and alleys patrolled by the fanatical Foot Clan.™

Along the way, search for bonus weapons like the Triple Shuriken. You'll have to also think fast, switching turtle identities in order to match their karate skills with those of the enemy.

So grab your joystick and nunchukus, then control every leap, chop, slice and dice, until you splatter Shredder senseless or get yourself hacked into turtle soup.

Now featuring the ULTRA® "GAME SAVE" command.



ULTRA® GAMES

Teenage Mutant Ninja Turtles, Shredder,™ Foot Clan™ and Mouser™ are registered trademarks of Mirage Studios, USA. All Rights Reserved. Used with permission. Based on characters and comic books created by Kevin Eastman and Peter Laird. © 1989 Mirage Studios, USA. Exclusively licensed by Surge Licensing, Inc. IBM® is a registered trademark of International Business Machines, Inc. Commodore® is a registered trademark of Commodore Electronics Ltd. Amiga® is a registered trademark of Commodore-Amiga, Inc. ULTRAGAMES® is a registered trademark of Ultra Software Corporation. © 1989 Ultra Software Corporation.

Teenage Mutant Ninja Turtles is available for IBM, Commodore and Amiga.